

Designer lean production processes essay sample



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DESIGNER LEAN PRODUCTION PROCESSES AND 5S Authors: Amalia Venera

Todoru , Doru Cîrnu Abstract: One of the challenges faced by businesses today is the combined pressure to reduce price and to provide an increased variety of options at lower volumes. This paper will present what we call 5S method as part of the Lean philosophy. It will explain how to introduce this concept and how can it be adapted in our institutions. 5 S is a Japanese concept. It is a methodical approach for eliminating time and material waste. The reality is that a crowded and unorganized workplace is filled with waste: wasted time when looking for tools , wastes provoked by excessive , material costs , space waste, etc. All these Japanese words that start with “ S” : seiri, seiton, seiso, seiketsu, shitsuke can be translated in every language. The idea is that these concepts have penetrated the universal values circuit, even if they have roost – sometimes strong – in each nature. Keywords: 5S, sort, store, shine, standardize, sustain, lean management , quality, performance

Jel clasification: L15, L16, L25, M10, M11, M16 1. Introduction Interesting is the analysis of the concept of lean production, a concept that depends on the industry domain, on the source or on thr initiation period in Lean organization and its true purpose in adopting the Lean methodology. Amalia Venera Todoru , Ph. D, Professor, “ Constantin Brâncu i” University of Tg-Jiu, Faculty of Economic Sciences, Târgu-Jiu, Romania, e-mail:; Doru Cîrnu, Ph. D, Professor, “ Constantin Brâncu i” University of Tg-Jiu, Faculty of Economic Sciences, Târgu-Jiu, Romania, e-mail:

Lean production is “ smooth” because they use less of everything compared to large series production – half the manufacturing space, half the

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investment in equipment and half the hours to design a new product. It also requires far less storage of inventory, resulting in fewer defects and a growing variety of products (N ft n il , 2010). At the same time the lean production is a production philosophy, which reduces the time between customer order and manufacturing the required product and the delivery by eliminating waste. A particular interpretation of the Lean concept in the vision of specialists, is that production is a phenomenon that seeks to maximize the results of the number one resource of the company, the labor resource: people. Hence, Lean thinking is a way of adapting to change, waste disposal and continuous improvement. There are many tools and techniques, that used together, maximizes the efficiency of the human resources and thus a company may appear as “ Lean” (N ft n il , 2010).

Lean management is based on the Japanese 5S concepts. 5S is a methodology for creating and maintaining an organized , clean, efficient and safe work environment. 5S title refers to the five activities falling into the tool, as follows (J. Peterson, R. Smith, 1998): – Sort (division, sort); Seiri – to keep in the area just what is needed to carry out the process. Delete everything else. – Storage (Store), Seiton – to arrange the remaining items after sorting so as to be readily accessible and usable. On this principle are organized work area. – Shine (Shine), Seiso – to regularly clean the work area and the equipment so as to maintain the performance and appearance, as if they were new. – Standardization (standardized), Seiketsu – to eliminate the causes of contamination, the useless things and make everything look “ by the book.” This standardizes the process of that area. – Support (Sustain),

Shitsuke - requires maintaining high level of discipline and continuous performance and not by leaps and bounds.

2. Logistics Although 5S should be used continuously, the first step towards the 5S 5S is an event. The event should be focused on one area of process and lead the team must complete all five stages. 5S is not right to implement only the first step, even if you do the whole factory. After developing an area, observing all the five stages, we turn to other areas in the same manner, going through the same five stages, each time. The event can last from one day to a process reduced to three or four days for a more elaborate production process. Key elements to be in place before the completion of an event are: support, area coverage, employees, communication, equipment, accessories and auxiliary materials. Thus “support” implies that a 5S event is not a trivial thing, but rather may be the beginning of major changes. To ensure success, you need strong support from management.

The event promoter must have a clear - a champion who initiates the event and enjoyed it, in other words, the customer. “Scope” - when an event is generated, the biggest failure is unclear due to coverage, so it is important to attach a clear area, focusing on a narrower process during the event and do not extend outside the area, until they go through all five steps. “Employees” - another key element is the involvement of people in positions adequate. 5S is a “team sport” and require the involvement of people who actually work in that area. Other areas of activity to be involved are: maintenance, design and IT. “Communication” - all affected stakeholders should be aware of its existence and consequences. We must also

understand the importance of the event immediately, without even considering its delay. 5S follows the Kaizen mentality of doing things now and not deferring them for later, hence the need for strong support from management. The Rule of improving the process is ten times more communication than usual. “ The equipment accessories and auxiliary materials” - Most of the event takes place even in the process area, but it is necessary to have another quiet area to train another team on the 5S methodology and to serve as a work area from time to time, throughout the event. It is necessary to have serving equipment, accessories and other items to photograph the area before and after the event to present the impact.

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The figure below shows the key elements that need to be in place before the completion of an event.

Support The Key elements needed for the realizing of an event

Scope

Employees

Communication

The equipment, accessories and auxiliary materials

Fig. 1 -The key elements that should be in place before the completion of an event -

3. Designer processes The design process follows the five stages, making it easy to coordinate. The approach involves identifying all opportunities for 5S, the execution of the opportunities and of the audit of the 5S based on 5S audit assessment matrix. The first step is to ensure that all items required to detach itself of unnecessary ones, because it leads to: the elimination of losses that would otherwise slow down the process, the creating of safer work areas (there are fewer sources of accidents at work), the creating of more space is needed that allows storage area landmarks, but also allows other useful work, and also allows easy viewing of the process.

The next step is aimed at arranging the storage of all items that are required, to have a place for everything, to make sure everything is in place. Storage is needed for the following reasons: - To clearly show what is needed in the area and what is not necessary; - To make finding articles or documents, easy; - To save time by reducing the duration of the search for the operator; Brilliance, as a next step means keeping the work area clean continuously under increased standards. A clean workplace is an important indicator of product quality and process. The compliance with the storage activity motto " A place for everything and everything in its place"- makes the clean up much easier (Peterson, J., R. Smith, 1998) The standardization is used to maintain work at a level that facilitates the discovery and identification of the problems. If 5S is implemented as a stand-alone event, a separate project, then standardization is applied only to the five elements, but if 5S is the improvement and control side of the project, it will require more standardization.

If the process is already defined from the phase improvement, the standardization will include the sorting, the storing and the gloss, but may qualify for new processes and standard work, which means an integrated control of the process. From the perspective of 5S, standardization will transform the activities of sorting, storing and shine in daily activities. The basic idea is that work must be kept clean enough to be suitable in order for the visual indicators to discover hidden problems. To achieve this level there must be taken into consideration: - The photography of standards and their use to better communicate expectations; - Creating a list of tools, equipment, materials, and for each, that must be set to maintain standards; - Creating a list of daily actions to maintain standards; - There must be set clear standards and responsibilities and they should be divided into areas for equipment to maintain standards if necessary (to avoid the no-man areas); - Information must be submitted using the standard terms, so that everyone gets the same information. Standards must include everything, and standards must be visible.

An important element at this stage is the visual management. Encoding with a uniform and standardized color scheme of the different elements can be an efficient way to identify the abnormalities presented in the workplace. Visual Management is “ the ability to understand the status of a production area in five minutes or less, by a simple observation, without using a computer, without talking to someone.” The visual management is done by signaling the completion of the conditions that may lead to the production of an abnormal situation, so that it is possible to timely apply corrective actions. A significant method in this area is known as “ Andon.” (Taylor, G., 2008) The

name comes from Japan, where the Andon signal is designating a remote signal. Currently, the Andon sign means an electronic, audio and / or visual device, indicating, for example, the operation of equipment. The most common ANDON devices have three colored areas (red, green and yellow) and the color code is similar to that used in traffic lights.

Green means that everything is normal, yellow (usually plus a beep and flashing) means that there is a problem that needs special attention - change in production or planned maintenance, and red indicates an abnormal situation / damage. As a result, Andon is a specifically visual management tool , which is about the location of lights and sound to indicate the operational status of the process. Examples of visual management systems used: panels made to record production, with planned production; clear demarcation of where the parking of interoperable stocks is permitted , signs of workstations, the points of delivery and storage of products, photos / drawings and information to identify products; maintenance plans, performance indicators and quality indicators, work instructions, lights flashing red, yellow or green, acoustic warning signals, the noise of the operation of equipment, etc. The last stage-the support-is used to maintain discipline and to enable continuous improvement through assessment and frequent and effective action. Support (maintenance) is certainly the most difficult S and must be practiced repeatedly until it becomes a way of life. In fact, support must be consciously practiced, until you're not even aware of carrying out the action, because when you do it automatically it becomes a routine. Assumes common will of all personnel to maintain order and to

practice the first 4S currently working. The Shitsuke foundation is to eliminate bad habits and practices and the generalization of good ones.

Without the support of change, everything can quickly return to a situation similar to the beginning. 5S is not an activity for several weeks, and the advantages of this method applies only after all the five S are applied. It is often necessary to consider a sixth S - Safety and security at work, which depends on the use of appropriate tools / marked appropriately, the use of protective equipment where needed, by maintaining free access corridors, storage equipment protection in predetermined locations and easily accessible. So, 5S is not just cleaning, but it means organizing the workplace safety, marking and labeling, the audit used to determine the progress and maintain the improved results.

4. Conclusions

The benefits of 5S translate into increased productivity due to increased product quality and processes, elimination of time searching for tools, reducing time for parking cars, faster problem identification, improving safety at work, quickly identifying of products or jobs with noncompliance, improving employee morale, the introduction of best practices, promoting better communication at work, delegation of responsibility to improve the workplace. Respecting the 5S, and the other Lean Management specific method principles leads to the performance of organizations whether they are based on production or services. Lean manufacturing is a philosophy that reduces the time between ordering and dispatching its customer by eliminating losses, losses that are considered non-value adding activities.

Eliminating waste saves money only if the efforts of workers, previously consumed in activities such losses are redirected to activities that add value. The principle is known as the conversion of losses at work, and it is essential to becoming a world class company.

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