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PROPOSAL METHODOLOGY OF THE SUBSYSTEM - INTERNAL STANDARDIZATION AS PART OF TQM SYSTEM

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Abstract: *Standardization in the management system becomes a key task of the managers and a priority issue for survival of every organization of this century. Besides the company's owner which is mostly concerned with the profit and fast multiplication of its invested capital, many other parties such as consumers, community, employees, deliverers and the society make a pressure in demanding. As of those demands the organization is to adapt its management system according the standards in order to be safe that the expectations will be fulfilled. However, to fulfill the standards in Europe and worldwide it is necessary to approach towards huge - radical changes in problem solving i.e. reengineering, new manner of consideration of causes and not as the so far known way- thinking over the consequences. Implementing this new TQM strategy means designing solidly documented quality system that covers every working process in a company and appears as a necessary base for successful usage of statistical process control (SPC) and efficient teamwork which otherwise in case of bad quality system will not be able to be set. In this manner it is guaranteed that the attitude of the top management is conducted; this attitude is consisted within the quality policy that creates a climate and information base where team work can be developed. This paper offers a proposal methodology for designing and implementation of internal standardization of TQM system in companies. This methodology is applicable in factory for reconstruction of wagons and in a factory for confectionary production and has shown its efficiency and usage. In order to design the processes in line with the consumers/ clients content and at the same time to achieve profitability, it is necessary to reengineer the working processes.*

Keywords: *TQM system, reengineering, methodology, internal standardization.*

1. INTRODUCTION

1.1. Designing of organizational structure

Designing organizational structure is a task for strategy management. It is done as a result of the management activities by which the elements and the structure of the enterprise are being confirmed, delegate tasks and link segments into one whole. In terms of management activities a certain balance is determined between the desired goals and realistic abilities of the enterprise.

In terms of distinction the number of segments -organization units and its integration is being realized [12]. In terms of description of the working process those questions are to be answered:

- Is it and how much exactly is the given process covered with documentation?
- Is it and in what kind of interaction with the rest of the processes?
- How can a certain document be valorized?

In terms of describing the information flows the answer of the question follows: which

information is needed in order to lead the process and which information is an outcome of the process [7, 8]?

Regarding the description of the doer, there is an answer of the question: who is responsible for the process that is described in the document?

In terms of describing authority, the answer is: who is responsible for the document content, what are the other standards and procedures and which other parties are interested for the process and the document?

In terms of control, here is the answer: under which conditions and limitations is the document applicable?

During the structuring of the standard operative procedure (SOP) which is the actual base of the quality system, at the very beginning it is necessary to acknowledge the conceptual elements of the organizational structure and management. In description of the general concept, it is necessary to establish a connection between directives, procedures, working experiences and matrix for obligations and responsibility in terms of the defined hierarchy.

The organization structure and the number and width in distinctive levels of management actually influence the number of SOP and the manuals [3, 9, 10]. Certain difficulties in the usage of the quality system can appear as a consequence of the discrepancy that exists between the structure of organization and the structure of processes that are being realized within. The structure and the number of the documents (SOP and the manuals) are to be suitable for the real need of the organization and the actual relatedness. In case when differences appear it is necessary to provide suitable manuals for their usage.

Through documents and information an answer should be provided on the following questions: who should know, what needs to be known, where is it happening, when is it happening, who should the information be given to etc. [7, 8].

The usage of certain documents of the quality system (handbook, procedures or manuals) depends of the business culture and maturity of the top management and employees, and then it goes to the working norms and values, and the relation towards quality and employees awareness. Hence it comes to the fact that it is necessary (before their signing off and before starting the process of introduction of quality system) to make preparations that refer to the reduction of the organizational inertness and resistance and providing an adequate climate to accept the changes. Education program is the first step in realization of the aims.

2. EXPERIMENT

2.1 Proposal methodology for designing and implementation of internal standardization of TQM system in companies

Methodology of the subsystem –internal standardization is a part of the integral methodology for designing and implementation of TQM system within companies [5, 6. 11].

This subsystem creates management of a tactical level (in a large-sized companies), and in the smaller ones the elected could be managers in operative or strategic level involving the quality policy as a fundament on which the quality system in practice will be build.

In this phase of designing and implementation of TQM system according the strategy and plan of realization that is created by top management, the reengineering is being designed.

Meaning, it is about a radical redesigning of the working processes in order to achieve an integral quality management with least costs of work. Success would be guaranteed only if those processes are designed and realized with an optimal exploitation of resources in order to have the work done in one-shot, no defects and no loss of time however content costumers guaranteed.

The necessity of reengineering could appear in companies that are facing major crisis or foreseen crisis [2]. The implementation of reengineering is present to those companies that are in a good position and own a potential for development and extent and are willing to be in trend with the necessities of the global market.

If a top management opts for a radical reengineering the existing structure is ignored and the work processes are being redefined. As with the reengineering the customer comes first; however, users and customers can also be employed from that company, departments, offices etc. Reengineering gives the opportunity to

achieve distinct specialization of the work and major autonomy for the job that is done. If a decision is made to provide redesign of the working processes only minor improvements or modification is to be followed over the existing ones.

In this phase of TQM system designing the key processes and its subparts are determined therefore the strategy is set to a recognizable and everyday activities and functional approach is replaced with a process one. Therefore it is necessary to elect teams to design the subsystem for internal standardization. Creating managerial teams is done by:

- including, authorizing and encouraging managers about the subsystem of internal standardization design as part of TQM system;
- establishing an effective dialog with the employees through building an effective communication system.

Involving managers in tactical level is a process in which same people are authorized and encouraged by the top management to design the subsystem as part of TQM in order to resolve the issues and make decisions that would match the business policy of the company.

In order to create an efficient subsystem for integral standardization, the top management ought to prepare a suitable climate for cooperation and communications because every idea is a potential for improvement or innovation and at the same time it generates new ideas.

The plan to design and implement of this subsystem should be the simplest way to disseminate the task within a deadline and according to a determined schedule, therefore the work will be done on time and successfully. The most used tool is Gantt gram.

Designing a subsystem- internal standardization as a part of the TQM system is teamwork and in those companies where teamwork rules do not apply it could be considered as unacceptable. The team cannot be a point where individual initiatives will be suffocated or will be attributed by the team leader. At the same time the methodology that follows has to allow not blocking the decision making because of the exaggerated individualism, expectations, lack of flexibility and creating a consensus for building attitudes. Modern interpretations of the system significance according to TQM (and the people) in accomplishing goals of total quality management is: coordination between system and people.

The flow of the process for designing and implementing of internal standardization is given on Figure 1.

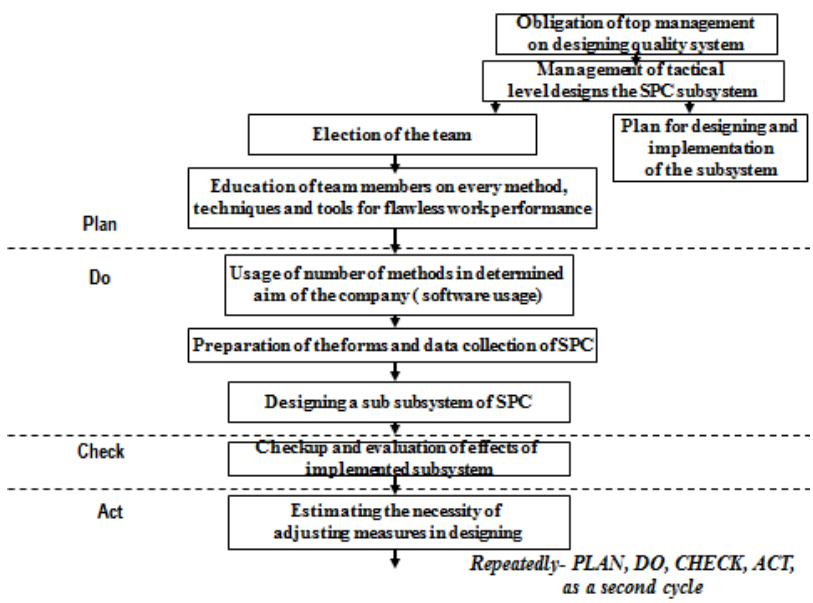

Figure 1: The flow of the process for designing and implementing of internal standardization [5]

(Plan) Step 1: Plan for designing and implementing of subsystem - internal standardization

- Disseminating of the tasks within a deadline and according a schedule - Gantt gram.

Step 2: Team members' election

The team is responsible to design and implement the quality system. During the election, it is necessary to take into consideration the knowledge and the engagement of professionals and competitive employees that would be able to integrate their experience and skills in SOP (Standard Operative Procedures), in order to rationalize the processes. As for the election it is necessary to estimate other factors:

- whether the team is ready to perceive the whole process;
- whether team members can perceive the critical points where data could be collected;
- whether team members can see the flow of each process operation, individual movements, resources movements;
- whether team opts for perfection (flawlessness) of the process from start till the end.

Step 3: Team member education for designing and implementation of quality management.

Each team needs to be trained in order to help out:

- to provide an adequate strategies to the company's policy;
- design a measuring scheme by which the improvements of the system will be measured;
- to supply the process with proper documentations;
- to determine control of key point of the business process significant to the quality;
- to design a matrix for obligations and responsibilities to provide quality;
- to determine the costs and time necessary for certain operations;
- to use benchmark and establish a feedback;
- to diagnose the possible causers and make an obligation to everyone.

Step 4: Designing of SOP (Standard Operative Procedures) according the actual condition of the company.

Management team of a tactical level which has passed the training is the creator of SOP for realizing work processes to each sector in the company, as well as decision making for using the methods and techniques for flawless work and optimization of quality costs.

The team, based on the gained skills, should implement the company's policy through certain strategies. In order to accomplish its role it has to cooperate with the managers of strategy level and lead its collaborators from operative level. SOP is done according the managers knowledge, technology and work organization.

Through SOP the flow of the work processes is defined, and based that the obligations and responsibilities of all employees are defined as well. Therefore it is taken into consideration that the processes will be simple and efficient (more of the matters will be combined into one). The process has to me done in a natural and shortest way, directed towards results and not tasks with an expertise from the person that deals with the task.

The number and the volume of those procedures (SOP) depend on the number of activities in a certain process. Regardless what is the number of SOP they need to be connected among each other, and the exit in one process should be an entrance to another. As with the procedures, good order and working discipline is achieved because proper communication between the employees in problem solving is linked with quality.

The best way to depict SOP is by block diagram I which all the process phases, individuals that perform the activity as well as the internal and external documents are marked. In this manner, all the lacks can be easily scanned and timely correction can be done to eliminate the causes. The block diagram is the simplest and most practical manner to describe a business process.

While creating SOP for a certain process the following activities are needed:

- identifying at all phases that influence the process quality and working as a whole, which ought to cover every formally adopted rules of employees behavior;
- confirming all necessary information for process functioning in terms of internal and external volumes;
- determining the process goals - limitations for tolerated exempts;
- confirmation of the necessary resources for process functioning – people, materials, infrastructure, documents;

- defining of process performances - designed, necessary and other features as a base for a surveillance to the process functioning;
- defining measuring sizes (criteria), limitation for tolerated exempts, as a base for quality valuation of the work process. Criteria and methods necessary for providing efficiency from the functioning and managing with processes needs to me measurable and all the activities that are necessary to achieve the planned results of the process should be integrated in the documentation of quality management system (registry book, SOP and manuals).

Step 5: Examining the possibilities to improve quality and process efficiency.

At this level apply:

- statistical methods of cost optimization;
- methods for quality anticipation;
- methods for determining company's vision for development;
- planned experiment etc.

All those methods and techniques would assist in optimization of the work process and designing SOP. Optimization is one of the most significant quantitative approaches in decision making, because most of the problems in designing, construction, and SOP realization could be solved.

In order to improve the already introduced subsystem of standardization, important matters are the suggestions, estimation and remarks on 3 levels:

- first level includes: internal checkups, corrective and preventive measure, regular meetings and scientific approach to the work;
- second level includes: expanding the extent of the quality system and integrating demands for safety in food, environment, employees' care etc.
- third level includes: managing business processes, space where possibilities should be improved and place where constant and upcoming necessities of the buyers/ consumers will be contented.

Step 6: Confirmation of the controlling points where data can be collected.

In order to realize the set goals a proper control is needed. The opportunities that are given by ISO 9001:2008 standards allow to defining and activating control stand what would preclude the less quality product to be exposed to the buyer/ consumer. In this way it is available to preclude possible defects, timely elimination of problems by removing eventual causes.

Within standard operative procedures the flow itself requests measuring in order to check whether the process is to be continued or not, therefore it is necessary to confirm control points where the data would be collected.

Useful technique for identification of critical points is: setting issues in terms of requested performances in a given process. Those issues refer to:

- What determines quality product?
- What determines success?
- What do their consumers/ buyers like?
- What can go wrong?
- What is not functioning well?
- What could be an indicator for an early action?
- Where are the delays, the breaks for fluent process flow?
- How much is the amount that has to be done?
- What could be controlled?
- What limits our abilities?
- What limits our performances?

In order to be able to respond those issues it is necessary to define the following:

- every entry and resources in a given process;
- every exit of the process (products, by-products and products effects);
- each operation is consisted of process and the link among;
- matters are spent (consumed);
- matters that are used and returned (as of the process).

Step 7: Documents defining - internal and external.

Documentation is a written way of quality in a given process of the company. It helps to perceive who does what, how is done, where is done and to who it reports to (what kind of report) etc.

Steps in defining documentation are:

- to adapt its format;
- to determine which documents are needed for the process;
- To provide condition for documentation development (quality manual, procedures, internal standards, reporting documentation, records for quality, plans for quality, systematization).

In the course of preparing the documentation those following rules are to be respected:

- each document should be incorporated to every function of the company and provide the most adequate information on quality;
- each document should be simple, comprehendible, logical and provide clear, neat and necessary instruction for work;
- should represent a base for computer data processing;
- to be acceptable for archiving, multiplying and delivering to each workplace.

(Do) Step 8: Implementation if acquired knowledge and experience within implementation of the designed subsystem and standardization.

At operative level the job is organized in all sectors, according SOP (standard operative procedure) in order to realize the plans for quality. At this level the responsibilities and the obligations to every employee are defined. Statistical methods for evaluation of the ability and stability of processes, correlation, regression, dispersion, control cards and dependence of the indicators for products' quality of the factors of production are used to check and evaluate the designed system for standardization.

(Check) Step 9: Checkup and evaluation of the results in the newly implemented SOP.

At a routine level, the checkups and surveillance is done continuously, all in order to perceive if plans and organizing are realized. Many tools for estimation and evaluation for usage of SOP are implanted for this matter, such as: Pareto analysis, Ishikawa diagram, Poka - Joka method, trend card and every method that the employees could comprehend and implement in their work. Most useful methods are: self-control and Poka - Joka method because they provide completing of a given operation in production without cost.

(Act) Step 10: Evaluating the need of adjustment measures.

Based on the checkup and evaluating of results that propose adjusting measures the cycle goes around again.

3. RESULTS AND DISCUSSION

This methodology was implemented into practice at some companies [4, 8]. The need of designing and usage of SOP was emphasized all in order to accomplish defined quality and to protect the customers from defective products.

Top management at a factory for railway vehicles has set a task to improve the management system in terms of quality considering the environment, reducing garbage dispense, decreasing the level of air pollution, water and soil, save the resources through following the cost of energy and material as well as adapting towards all national and local laws and normative acts that are related to the environment.

In accordance with ISO 9001 standards, SOP are designed according QC-CE (Quality Cirle-Cause and Effect) (model for every business process) [1] and at that set a standard operative procedure within the process of steel tempering is designed is designed (Figure 2) [8].

This methodology is implemented in a factory for confectionary production [5], where the defined quality has been accomplished, buyers/ consumers have been secured from defective products and the competitiveness of the factory on the market and profitability were increased, further on quality was improved, the costs and defects were decreased and finally contentment and involvement in decision making of the employees were increased. This refers to the fact that implementation of this methodology in practice is universal, regardless which production field is used at.

4. CONCLUSION

As of the theoretical analyses, which are proved by empirical verifications, the outcome is that implementing the quality management system in a solidly built quality information system the following benefits are acknowledged:

- providing product/ service quality that would fulfill demands of the clients/ costumers;
- providing quality of the business processes that would allow higher efficiency of the companies;
- optimization of business processes;
- accordance between strategy and operative management of the enterprises;
- providing base for constant quality improvement.

Those companies that formally receive a

certificate for ISO 9001 standard, without designing and implementing system for providing quality of products and services previously actually create unnecessary expenses and bureaucracy and do not provide the desired assets on the market of their internal. Hence is the actual question: why do we need a system to be able to provide quality?

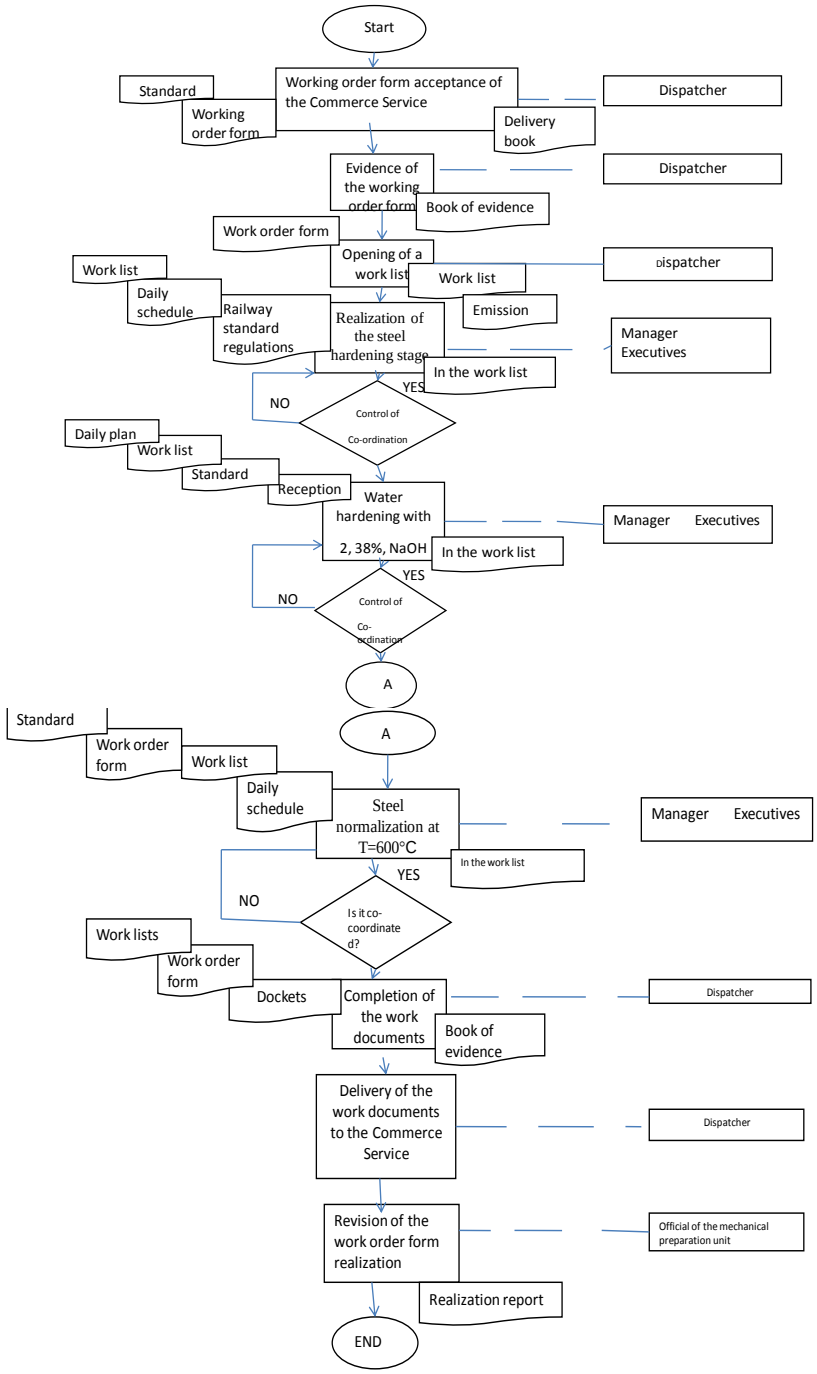

Figure 2: Standard operative procedure for steel tempering

The system for providing quality according to the international standards has to be oriented by the already set goals of the business philosophy and strategy management of tan organization. The quality system especially the quality process should not be built in an "airless" space without having an established solid and stable relation with the basic goals of the top management. The competitive advantages are quite often decisive within the development and usage of the system for providing quality. The peril is possible while implementing the system because business philosophy is not present in each business process.

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