

ers are presented in adequate legal regulations. Their supplement are connected in "Code of Ethics in Advertising". The Code does not constitute a set of standards replacing the compulsory legal regulations but only contains a set of principles imposing on the entities governed by the Code additional limitations irrespectively of the legal regulations in force [7-12].

One of the most important tool of consumer's protection against unfair trading practices is packaging. Over and above basic functions of product protection and conservation, packaging also plays a role in communication. This function is very wide in scope as it encompasses the technical information relayed to the consumer, as well as helping create a product's image [13].

REFERENCES

- [1] Product Management. Collective work ed. by B. Sojkin, Polish Economic Publishers, Warsaw, 2003.
- [2] Baker M., Hart S.: Product Strategy and Management. Prentice Hall Europe, London 1999.
- [3] Foxall G., Goldsmith R.: Consumers' Psychology for Marketing Manager. Polish Scientific Publishers, Warsaw, 1998.
- [4] Hales C.: Packaging as Tool of Marketing. Polish Economic Publishers, Warsaw, 1999.
- [5] Lisińska-Kuśnierz M.: Product and its Packaging as Message Carriers in the Market Communication, Proceedings of the 15th IGWT Symposium: Global Safety of Commodity and Environment. Quality of Life, Kyiv, Ukraine, 12-17 September 2006, vol. II, pp. 1404-1408.
- [6] Lisińska-Kuśnierz M., Ucherek M.: Packaging in the Consumer Protection of Consumer. Publishers of Cracow University of Economics, Cracow, 2006.
- [7] Act of 16 April 1993 on combating unfair competition (J.L. No 153.1503)
- [8] Act of 16 March 2000 amending the Act on combating unfair competition (J.L. No 29. 356).
- [9] Act of 17 June 2004 amending the Act on combating unfair competition (J.L. No 162. 1693).
- [10] Council Directive 84/450/EEC, of 10 September 1984, relating to the approximation of the laws, regulations and administrative provisions of the Member States concerning misleading advertising (O.J.L. 250, 19.9.1984).
- [11] Directive 97/55/EC of European Parliament and of the Council of 6 October 1997 amending Directive 84/450/EEC concerning misleading advertising so as to include comparative advertising (O.J.L. 290, 23.10.1997).
- [12] Code of Ethics in Advertising, Advertising Council, Warsaw, 2006.
- [13] Lisińska-Kuśnierz M.: Consumer's Protection by the Marking of Packaging, Proceedings of the 14th IGWT Symposium: Focusing New Century: Commodity-Trade-Environment, Beijing, China, 25-29 August 2004, vol. I, pp. 608-611.

APPLICATION OF SELECTED QUALITY MANAGEMENT METHODS AND TECHNIQUES IN PROBLEM SOLVING AND IN ORGANIZATION IMPROVEMENT – CASE STUDY

Jacek LUCZAK

Department of Standardized Management Systems, Faculty of Commodity Science, Poznań University of Economics, Al. Niepodległości 10, 60-967 Poznań, Poland
e-mail: jacek.luczak@ae.poznan.pl

Abstract: Common requirement of ISO standards is pointing out "what" not "how" something should be done, to meet the particular requirement. Therefore during the implementation, and mostly system development phase, appropriate tools and techniques should be picked. It is essential in case of the key elements such as - control of nonconforming product, preventive and corrective actions and continual improvement. Author describes the key elements of the 8D method using the car industry requirements as a basis. This method is one of the most popular car industry's technique for analyzing and solving problems.

INTRODUCTION

Car industry is a perfect training area when it comes to the usage of problem solving methods and techniques [1]. It's not only because of the requirements set by the applicable standards [2], but for the customer's requirements. They are presented in formal CSR (Customer Specific Requirements), but also in every audit report created by client's auditors or potential client's auditors. It can be seen clearly in the case of audits conducted by the OEM [3] (Original Equipment Manufacturer) or by the first tier suppliers.

Knowledge and sufficient usage of quality management methods and techniques indicate high organization's culture. Their usage should be associated with a certain maturity of the quality management system [4]. The practice of using quality management system tools shows that very few companies use the

knowledge about using those methods and techniques and the main reason for using them are client's or certain standards requirements [5].

In car industry in case of cooperating with the OE supplier (Original Equipment) usage of the certain tools for controlling the nonconformities, corrective and preventive actions and organization's improvement is 'obligatory', those tools are FMEA, SPC, 8D, benchmarking, flowchart, control charts [4, 6].

The herein article focuses attention mostly on the 8D method, which is considered as a key element of communicating with the clients regarding the subject of creating the supplies quality.

CASE STUDY

We will follow the correctness and purposefulness of using some of the known quality methods and their impact on decision making process in the organization using a car industry company [7], which is both AM supplier [8] and OE/OES supplier [9]. The company has a large spectrum of products and customers, for that it has to be a multifunction company with a great flexibility, it needs to react quickly and act right with the proper corrective and preventive actions in different production departments. For that purpose an interdisciplinary team [10] was created, which uses chosen methods for: creating new ideas, identifying and analyzing the causes, identifying threats and problems, realization and effectiveness evaluation. And after all the gained experience transformed into procedural solutions.

Examining internal quality problems with the use of 8D method.

The use of the 8D method for processing the external complaints and building the customer - OE/OES supplier relation is typical for car industry. It can be also used for internal, department's problems when the cause needs to be determined and analyzed. The 8D method [11] is the 8 steps problem solving method, used for implementing and strengthening the preventive actions within the scope of quality management system [4]. It assumes several steps for solving the problem, starting with the full diagnosis of its cause, and finishing with ensuring that the performed and strengthen actions were effective [4].

Depending on the rank of the detected internal nonconformity, defying the appropriate cause of it often needs engaging the larger group of workers that are directly and indirectly connected with the problem.

In the case study the meeting was held in the group composed of department's managers, experts and engineers. Using the 'brainstorming' [12] method each of them defined potential causes of the problem, which lead to nonconformities that weren't defined while designing of the process.

First of all the 'maintaining' actions were taken to ensure that the delivery with the nonconforming products won't leave the company. Permanent actions in every case are, verification of the technological process, control plans, documents used in the process, control of the stored products, products already sent to the customer and those being produced. In the described example apart from typical actions that were taken, decision were made about defying the nominal dimension of the pleated paper in the cutting phase and the actions connected with the seasoning of the pleated paper for 24 hours before packaging, changes were made in the documents as an evidence that the above actions were implemented.

Selection's results were included in the report to ensure the client about the proper course of actions. It has to be kept in mind that planning the actions isn't the only thing to do and for each of them a person responsible for that action needs to be specified and the date of realization.

Table 1. 8D report for pleated paper [13]

		8D REPORT	
customer:		Reference: complaints: 2774599/1 (2006.05.16)	opening date: 2006.05.18
Part no.: 000FPS468		1 - team: 1. 2. 3. 4. 5. 6.	
Name: Pleated paper			
997.110.021.73			
2 - problem description: Found: defective dimension - length of the pleated paper FPS468: about 590 mm (nominal dimension 609 mm with tolerance +20,-0). In dispatch of 672 pcs, there were 132 pcs damaged Dispatch date of defective pieces: 2006.04.05 Total quantity of defective pieces: 132/672			
3 - root cause:		responsibility:	
3a. material, components (N)		0%	
3b. man-power (N)		0%	
3c. machine, tool (Y)		25%	
* Stability of curing process,		technology	
3d. method (Y)		75%	
* Lack of nominal dimension - on the length for cutting pleating paper, before curing,		technology	
* Packaging of warm filters/ lack of seasoning,		technology	
* Not determine enough information about packaging method for pleated papers,		technology	

4 – immediate actions: <ul style="list-style-type: none"> ▪ Verification of the process, control plans, process instructions (completeness, actuality, availability). ▪ Define on pleating process nominal dimension for length of the pleated paper (change in control plan). ▪ Seasoning of final product (24h) before packaging (change in control plan). ▪ Training of people on packaging process (after curing of the paper). ▪ Control of the dimensions after pleating process and before curing of the paper (each 10 pc). ▪ 100% of the control for final product. ▪ 100% of the control for filters in warehouse and on the transport – there are no filters in warehouse and in the transport. ▪ sticking the labels: „100% tested” on the bulk boxes – implementation of this label temporary for next few dispatches. 	responsibility/ week production/ 20 production/ 20 production/ 20 production/ 20 production & quality/ 20 production & quality/ 20 production
5 – long term corrective actions: <ul style="list-style-type: none"> ▪ change of the oven for the newest one (possibility for monitoring of curing parameters), ▪ correction of the control plan (find nominal dimension for length after pleating and before curing process, set-up the control after pleating and on final product, seasoning of the pleated papers), ▪ set-up of standard packaging method (after curing process) and change of the bulk boxes, ▪ drawing of the filter for pleating process, ▪ set-up of the rules for dosing the glue, ▪ training of workers, 	responsibility/ implement. week (date): technology/ 23 technology/ 21 technology/ 21 technology/ 24 technology/ 23 technology 24 (17.06.2006)
6 – verification: 6a – verification (immediate actions): <ul style="list-style-type: none"> ▪ control of the length after pleating process (each 10 pc), ▪ 100% of control for final filters, 	responsibility/ week (date): production & quality/ 21 production & quality/ 21
6b – verification (long term corrective actions) <ul style="list-style-type: none"> ▪ control of the length after pleating process (each 10 pc), ▪ 100% of control for final filters, ▪ ppm analyze. 	production & quality/ 24 production & quality/ 24 production & quality/ 24
7 – permanent corrective action & preventive action <ul style="list-style-type: none"> • trainings of workers, • analyze of measurement cards – ppm, 	

<ul style="list-style-type: none"> • monitoring of curing process, • monitoring of glue dosage, • replace current oven by new one, • temporary PFMEA and corection of the control cards. 	
8 – closing: copy sent to:	Closing date: 00.00.00: signature:

After ordering the 'ad-hoc' actions and using the results of the actions taken, the team established the direct causes of the nonconformity. In our case study employees focused their attention mostly on defining potential causes of the problem in four categories typical for production processes: machine (equipment), method (know-how), material (components) and personnel (human factor).

The analysis showed that the nonconformity is caused by machine (equipment) factor, the instability of the curing process and by the method factor, the lack of specified nominal dimension on the length for cutting pleated paper before curing and ineffective method of packaging, which lead to finding products with faulty dimensions in the process. The problem that was reported by the quality department was referred to all the products with the similar technological process. After determining the nonconformity's percentage share in every category the team established corrective and preventive actions with the dates of realization, which were meant to eliminate the nonconformity directly and indirectly. Choosing the workers responsible for preparing and implementing the actions and creating the proper records, as the evidence for their effectiveness was also a justified thing to do.

To prevent the recurrence of the nonconformity the team worked out and presented the modified parts of the system:

- production line practices
- procedures.

Team's works ended with presentation of the final report to the production manager and discussing the team's and individual effort of team members in solving the problem.

SUMMARY

In case of multitask production and supplying the products for the first assembly it's crucial to ensure the effectiveness within the quality management system. Usage of techniques like FMEA, SPC, Ishikawa diagram, Pareto diagram, 8D - it's a need, but not only for the reports, but constant and well-known management element. The results gathered thanks to those methods are a crucial