1. **INTRODUCTION**

Customer services should therefore include the whole product life cycle, starting from customer identification requirements and expectations as a quality action. According to W.E. Deming and J. Juran, organizations that focus on quality process approach must modify the existing quality management system, quality tools and methods of quality management.

Base on M. Dudek-Burlikowska and D. Szewieczek, they stress out on concept of “process approach” is very general as it fit to all companies. It is because the combination in transparent ways all key mechanism which result from requirements for quality management system and quality process. The new edition standard of ISO 9000:2000, ISO 9001:2008, and ISO 9004:2000 are based on the process approach during preparation, implementation and improvement of effectiveness of quality system management aiming at increase of the customer’s satisfaction by fulfillment of requirements.

Likewise every organization subsist a detail chain process, practical with each other, perform a link of processes, where output range are at the same time of inputs range of the after process or base information for the process occurring in parallel. Quality output operation in the process preceding becomes a condition for the success of the subsequent operation. Any unforeseen nonconformity causes maladjustment, which results in deterioration of the process and possibility of errors in operation process and defects in the final product.

**BACKGROUND / OBJECTIVES**

The objective of the article is to proofing the mistake or error for the implementation of quality Zero Quality Defects with usage of the Poka-Yoke method. It takes two example of company to analyze the method for improving quality tool of operations. Both of the organizations are operating in manufacturing automotive parts. M. Dudek-Burlikowska and D. Szewieczek is the researcher presenting the new approach for the implementation of quality philosophy Zero Quality Defects with usage of the Poka-Yoke method in the polish organization.

Both of them have determined the design of the research which is the possibility of usage of mistake proofing device is connected with monitoring and improvement of operation in the process. The researcher has declare the limitation of the research is Poka-Yoke method has prevent the errors by putting limits on how operation can be performed in order to force the correct completion of the operation.

This research has shown that the possibility of implementing of the Poka-Yoke method as a factor of improving operation in the process in the motorization company. The aim of Poka-Yoke method is to eliminate or minimizes the human error in manufacturing process and management as a result of mental and physical human imperfections. The researcher has indicate there a connection or relationship between Poka-Yoke method and PDCA cycle.

1. **Central discussion of the article**

The title of this research is Poka-Yoke method as an improving quality tool of operations in the process which focusing on how the organization uses this as a quality approach. In this paper selected problems, connected with quality control using Poka-Yoke method in company have been presented. Also suitable examples of usage of mistake proofing method in Polish companies have been given.

It also include an important factor in the functioning of company shall take appropriate selection constant improvement strategies of processes, where special emphasis is put on preventing strategy. The prevention strategy replaced detection strategy; new strategy indicates shifting the focus on the functions and activities relating to improving each element and operation broader process.

Poka-Yoke method was used to prevent defects and errors originating in the mistake. Therefore in Japanese organization before Poka-Yoke been introduced by Shingo Shigeo the element of the principle Zero Quality Control is just seem like this method. The technique in Poke-Yoke method can be applied both to prevent causes, which will result in subsequent occurrences of errors and to carry out inexpensive control determining whether to adopt or reject the product.

The automotive company has been taken as an example in showing the implementation of using Poka-Yoke method. Both of the companies are suitable with using this method because of their operating business is on manufacturing. The company use Poka-Yoke method as a principle of process continuous improvement which is Kaizen.

1. **SUBJECT COVERED BY AUTHOR**

This research are indicating on how the Poka-Yoke method been implement as an improving quality tool of operations in the process. It is related to the topic of tools for process improvement. Evans and Lindsay (2008) in their book have introduced the 7QC which mean the seven quality control tools. However they also indicate the others quality improvement tools which is Kaizen Blitz, Poka-Yoke and Process Simulation. Poka-Yoke is an approach for mistake-proofing process using automatic devices or methods to avoid simple human error.

**Prevention of defects in processes**

Present opinions have stated that good quality can be gain only by organization which implement the Quality Management Systems, which used if idea of continuous improvement of all processes and also which used the quality tools and quality methods, recycling technology inside of production process. However the in the new era of quality the methodology like Zero defects, continuous improvement, six sigma and method of quality (FMEA,QFD SPC) it is worth set of general measures to prevent defects.

The researchers have found out several activities aiming at preventing defects, Identify possible errors despite of protecting operations, monitoring each process including the possibility of making errors by human being or the machinery, Preparation detecting methods for errors or malfunctioning, Identify and select operations to be implemented after being informed of the detection defects

**Poka-Yoke method (mistake proofing, error proofing)**

It is the translation of “resistance to errors”, errors resulting from inattention. The possibility of error are been seen at each stage of product life cycle. As result the final product has defects and customer is discontented and disappointed. The principle of this method is it does not accept to produce even very small quantities of defect product. The technical aspect of Poka-Yoke methods can be applied to prevent causes and carrying out inexpensive control. The task of Poka-Yoke methods is to detect the defect as soon as possible. The potential possibility of product defects is mistake resulting from the defect and also the observation mistake and it’s correct.

The defects are appearing in two states the defect either has already occurred or about to occur. There are three basic functions to prevent or reduce defect: shutdown, control and warning. There are also two approaches to implement Poka-Yoke method which is control method and warning method. Control method is where detects the problem and stop production lines or processes so that correction may be carried out immediately, while avoiding a series defects. While warning method is used to carry out inexpensive control determining whether or not each produced product is to adopt or to reject, shall inform the emergences or series deviations by various sounds, lamps or other warning signals.

**Practical using the Poka-Yoke method in the automotive company**

***Automotive Company X***

Poka-Yoke method has been implemented in one of the companies of automotive industry. This organization has two main production sectors: manufacture and assembly gearboxes and manufacture of engines. The purpose is the manufacture of these elements of high quality, which meet quality standards in accordance with the principles processes continuous improvement (Kaizen). One of the ways of realization the improve strategy is to use Poka-Yoke techniques.

In all organizations belonging to the group of company is functioning system of production based on its own idea, inside which alongside other systems operate SQC (system of Quality Control). The aim of the system QC and techniques Poka-Yoke is to ensure 100% quality products and their delivery to the customer as soon as possible and at a minimum cost. This means that the company ensures the monitoring and prevention of defects at each stage of production.

The main motto of companies is "not to manufacture, not to release on the market and does not accept products with defects". They are been guided by the Poka-Yoke principle which are defect arise most as a result of human errors where the same mistake been made, errors due to misunderstanding, incorrect identification, forgetting, lack or training and improperly implemented good intention.

The analysis of this company show that most of the error can be prevent by using poka-yoke method where if there is an error it is necessary to an immediate reaction, response to error in short term, frequency of loss is less and does not require the intervention of engineers. In this company there are three level of Poka-Yoke method which is alert, control and prevention.

***Automotives Company Y***

This company are implementing Poka-Yoke method in producing roller bearing. They have seven departments and each of department is interrelated to each other. The method has been supervised to all departments by Measuring Laboratory and Department of Maintenance. Base on the company plans in implementation of Poka-Yoke, researcher found that the choice and describe process in which techniques Poka-Yoke can be used, identifying of defects forming in products, define the defects validity, investigate formation selected defects, find ways prevention errors and defects, implement good solution, correct control of functioning used solutions and possible corrective actions and also transition to a further problem identification.

**Relationship between Poka-Yoke method and cycle PDCA**

Based on the standard of ISO 9001:2000 the organization shall continually improve the quality management system, use of the quality policy, qualities objectivities, audit result, analysis of date, corrective and preventive actions and use PDCA cycle. Therefore the rules of Poka-Yoke used in the company shall be connected with continuous improvement cycle PDCA. Continuous improvement PDCA cycle with using Poka-Yoke method base on act which mean back to the problem, thought what can be improved, plan to select created defect and find its causes, do where select the best solution Poka-Yoke meeting criteria and enter them and last check where gather all the data of the problem and dissolution.

1. **PERSONAL VIEW AND COMMENT ABOUT THE ARTICLE**

Personally Poka-Yoke method is an effort of the organization itself to prevent defect product and to reducing the number of defect to its acceptance. Each organization should have intellectual capital resources which permitting for creating of quality processes and the same finished product. The aim of the method is to eliminate or minimize human errors in manufacturing processes and management as a result of mental and physical human imperfections. The main part is to eliminate the errors independently.

Generally the idea of this method is to preventing causes of defect, which may result in errors and use relatively cheap control system for determining compliance of the product with the model. In the described organization that using Poka-Yoke method it ensure the high quality of produced engine elements, as well as by the continuous monitoring process all allow to minimize cost and sharing not great effort to improve.

The usage of this method requiring strong basis in the overall quality management. A clear indication is needed to distinguish between a defective and correct product. It also requires the company use this method to take an immediate reaction and the correction as well as a result in the operation. The error may arose from many reason, but it only can prevented if only people are able to identify the problem at the time of formation, define the causes and make appropriate corrective steps. The best way of defects reduction and reduce the cost is by prevent the defects in the process before their appearance.

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