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SOME PATTERNS OF APPLICATION OF FMEA METHOD FOR STUDYING THE QUALITY OF A PRODUCT

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Abstract: *In the front is intended as FMEA method to ensure a process for ensuring quality in industrial projects, which may apply to products and manufacturing process, through recognition of failure, issues/their effects, as well as the likelihood of their occurrence in order to reduce the substantial failure as well as the consequences thereof. The article will look like the following: to establish the potential of failure of the products or components of products and not only; determination of potential effects of different modes of failure; application analysis of failure modes, effects and failure criticity. You can apply for a product FMEA method and not only. All these actions will lead to warning of potential product-related problems since the beginning. Warning actions can turn into animation techniques of group work and creativity.*

Keywords: *Method FMEA, minimize risk, preventive actions, potential defects*

1. INTRODUCTION

FMEA method is a procedure in the product development and operations management of analysis of potential failure modes within a system of classification and probability of failure. Originated from English Failure Mode and Effects Analysis, means Analysis of the Failure mode and effects (AMDE) [1]. Product quality and reliability are of critical importance in all existing systems. Such as the reliability and quality of a product is to be built since the early stages of product design. FMEA method is desired to begin the first stages of conceptual design and continues throughout the life span of the product. Designers and technologies will start to think about the quality and reliability of the product, because no product even last generation no matter how optimized is not likely to result in a better product than the designed [1]. The main idea which does this method is that the flaws that does not produce nor are removed. The concept is not a new one. By developing the method, FMEA is carried out as a tool of systematic analysis of quality and quality of planning which can be easily understood and applied by anyone. Used correctly the FMEA enables the discovery of problems with quality and avoiding their occurrence through appropriate measures [2].

The control of the traditional inspection after the process of the production must be preceded by systems that have planned the quality from the very beginning and be followed by continuous improvement of the product [3].

A corresponding activity type FMEA reliability team to help identify potential failure modes based on previous experience in

developing similar products. In this way all failures can be removed from the system with the minimum possible effort and resources [4].

2. ANALYSES

At the stage of manufacture of the product, information on the process, or the means of production are particularly important and come in more efficient application of FMEA method already achieved, which may also evolve.

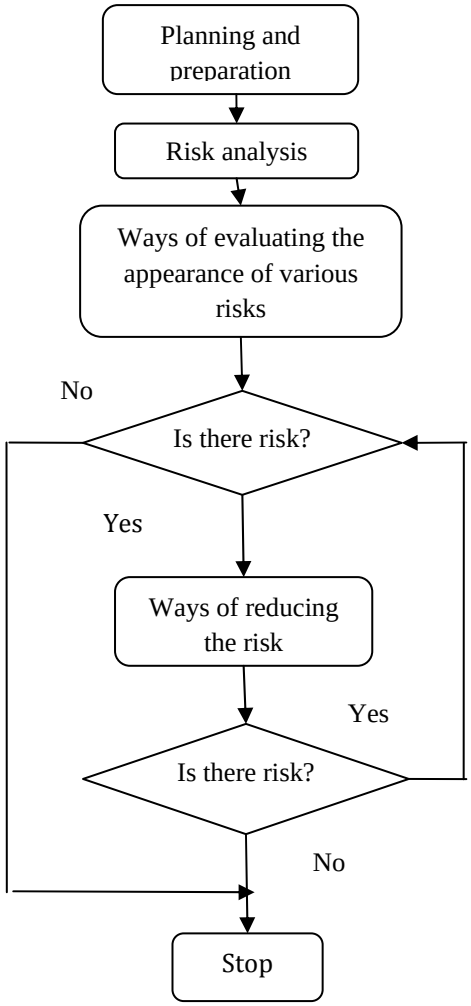

Figure 1: The logic of the FMEA analysis for a product.

Even in the use phase of products, information products and processes come in addition to the already completed FMEA however leading to minimize risks, figure 1. In figure 1, by applying FMEA method will minimize the potential risks and analysis. It will be carefully scrutinizing all kinds of defects and risks of potential as well as their causes and effects.

FMEA method must be used before the completion of the product. If the customer subsequently requests such a method are useless effects being null and void. This shows that it is necessary for this method to be within the organization.

The product is systematically broken down through a "top-down" in components or functions, and subsequently studied with respect to construction requirements, and keep these requirements in the course of production. Systematic analysis procedure is supported through the use of a corresponding form. In figure 2 you see that all the departments involved in delivering products bring their experience in analyzing and FMEA success.

At the same time the success of FMEA depends largely on the creative team. The FMEA analysis necessary for the nomination of a coordinator who guided a team of basic: product designer, technologist, personnel from quality assurance, auditor and team of experts made up of: master programmer, worker, N.C., vendor and customer. This team of experts helps the team to deepen analysis FMEA.

During this phase, the guidelines have been established that will be subject to analysis of FMEA in the light of the criteria for use [2]. This team of experts helps the team to deepen analysis FMEA.

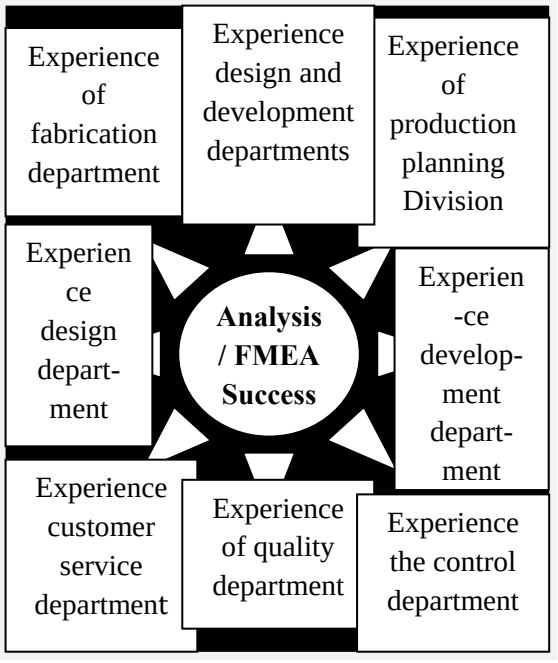

Figure 2: Analysis/ Fmea's success in order to ensure the quality of a product.

After establishing the functions and potential defects, the next step of the analysis is to identify the potential aftermath of FMEA defects. This requires a review of the team. Identification of the need to start with potential defects has the most serious track potential.

According to [4], the use of FMEA method has some advantages and disadvantages presented in table 1.

Table 1: Advantages and disadvantages of FMEA

ADVANTAGES	DISADVANTAGES
-Early identification of potential failures; -Improve the quality, reliability and safety of products/processes; -Improving manufacturing company; -Increasing customer satisfaction; -Reducing the time and resources involved in product development; -The development of appropriate data bases in the prevention of future disks; -Reduction of expenditure in respect of the warranty of the product; -Increasing the efficiency of production; -Reducing electrical on the turnover.	-Is limited by the experience analysis team members; -Can only identify major failure of a system; -Cannot find the failures of a complex system or subsystem; -By taking the product of the three indices of risk, a failure with an index of greater severity can obtain a lower risk than another failure.

The final step of risk analysis is done the list of measures to prevent and/or the discovery of the defect or fault of the case and/or in order to limit the effects of its prosecution.

Within it all the defects, potential consequences of potential flaws and potential causes of defects shall be assessed with reference to the importance of monitoring of potential customer, the probability of the probability of discovery of potential defects. An FMEA analysis must change with technological process and to adapt to any problem that arises. FMEA analysis is done and to verify the problem is taken into account in the analysis and what solutions or actions are expected to apply. So will watch if the actions envisaged by the FMEA were well implemented, figure 2.

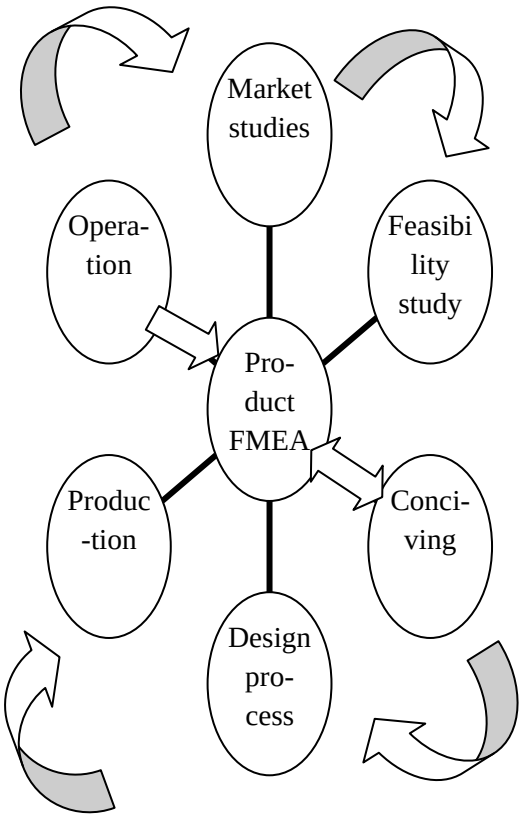

Figure 2: The application of FMEA process stages in the life cycle of the product

FMEA analysis target of a product is to determine potential or existing failures and classification according to risk levels, outcome

analysis consisting of triggering corrective or preventive actions to minimize the risk of each level failures.

3. CONCLUSIONS & ACKNOWLEDGMENT

In this article, FMEA method is an effective tool to quantify the risks, so that they can be analyzed, prioritized, mitigated or eliminated. FMEA can be applied both for study quality of a product as well as in all types of organizations, including manufacturing and services.

The method applied, may lead to lower production costs and improve products. Process FMEA provides an alternative approach to performing a Failure Mode and Effect Analysis. Occurrence, severity and detection rankings replace apportionments and failure rates. According to Crosby, while raising the quality of registers and a reduction of costs and as a result, not the quality, but the cost of non-quality. This idea led him to affirm: Crosby's "quality does not cost, but it is not a gift" [5]. FMEA method is created by specialists and applies to using specialized software. FMEA method determines and ensures efficient quality management and technological progress and economic.

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