iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** II **Month of publication:** February

DOI: http://doi.org/10.22214/ijraset.2019.2095

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 7 Issue II, Feb 2019- Available at www.ijraset.com

A Review of some Product Development Techniques applied in SME's Industry

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Abstract: ***Nowadays the new product development or the current product, I make some changes are usually difficult tasks for any industry. While any company changes its existing product, some common factors appear in the process. To meet the needs of customers or to meet the market demand, there is also a challenging task in the current market scenario. Therefore, to meet the demands of a transformation design and to reduce waste, along with various industries, research scholars are also engaged in the development of new tools, technologies for product development process. In this paper, using the APQP technique to remove the internal factors developed within the industry as well as meeting the needs of the customer and the market demand.***
Keywords: APQP, Six sigma, QFD, NPD techniques, APQP methodology, advantages of APQP

I. INTRODUCTION

Advanced Product Quality Planning (APQP) is a framework of procedures and techniques used to develop products in industry, particularly the Automotive Industry Action Group (AIAG) [1,2].The term TQM first appeared in 1961, when the concept was devised by A. V. Feigenbaum and named Total Quality Control (TQC), have highlighted that TQM integrates fundamental management techniques, existing improvement efforts [3]. A standardized version of the procedure is fairly common without paying attention to the quality of its preparation [4]. APQP technique used automotive industry challenges are: Innovation, more complex product, reduce new product development times, complicated supply chain and increasing customer and quality requirements [5]. With there is still less documented evidence of its implementation as a quality improvement tool for an existing product [6]. The APQP is found that in the automotive industry as a collaborative effort by ford, GM and Chrysler to close the product quality gap that divided them from their Japanese counterparts [1, 7]. The use of this systems approach in management has been comprehensively elaborated in the earlier and contemporary literature about management. Although there are certain weaknesses in the systems approach in organizational and management theory, especially regarding human behavioural role and influence of cultural traditions [8]. Companies nowadays work in environment with high market uncertainty and changing requirements, which in turn have consequences for the processes, organization and integration of the suppliers responsible for the customer's product and production system development, as well as product industrialization [10]. The Fig. 1 prescribed chart will explains the APQP flow process will be completed by four phases.

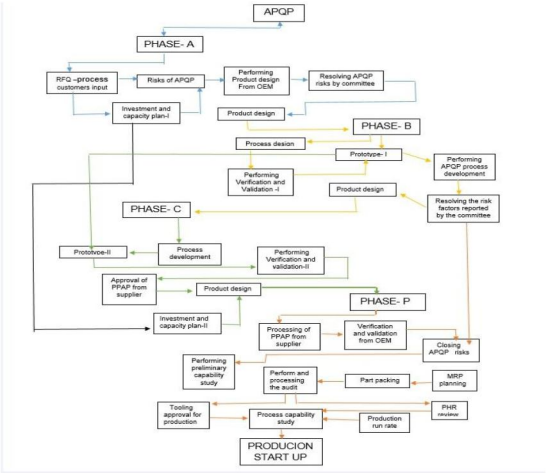

Fig. 1 APQP Flow Process [9]

When improvement any product organizations has to think about various factors. The significant factors to be considered from product development point of view are shown in figure 2.

Fig. 2 Factors affecting product development [12]

II. EFFORTS BY VARIOUS RESEARCHERS

1) R. Dandekar et-al have studied about the new product development in today's era is always challenging and creative work. Internal and external factors are considered in new product development. And to overcome these two tasks completely new techniques are used so that these factors get overcome. And the new technique is used to completely remove these two factors. Researcher has used the new technology APQP by studying Six Sigma, Lean Manufacturing and Quality Work Deployment Techniques in this paper, to remove these factors. It concluded that the customer needs for the new product, the product quality and the price of the product have also been described as the factor. And in order to balance these factors, APQP technology has been described as one of the best technologies.

2) Aditya M. Deshpande et-al have discussed the automobile engineering has created the ED to develop new ones. And the troubles in ED have been overcome by using APQP technology. This APQP technique has been engineered by automobile engineer students to the solar car system, and has overcome the following problems through APQP. There were also some other objectives in addition to designing a solar car system, due to which APQP technology has been used. These three objectives - the ability to work in project development, implementation and multi-lateral teams.

3) Pradeep Rana has also studied the focus of the company has been given attention. But achieving the goal of perfection is not easy by any company. At the same time, it has to be ensured that the product or service is meeting the needs of the company's customers or not. The company is using APQP technology to identify the needs of customers. This paper I have been stressed upon to achieve perfection by the company's employees. And APQP has been used for this. It has been concluded that the company uses QMS to help the organization recover. And to satisfy customers' needs by identifying them. From which the company can determine the goals and objectives of its policy and strategy.

4) D T Safarov et-al have discussed about his paper has been working on research by the SPC algorithm. Because of which MSA, preparing management plans, creating and improving automotive components can be done effectively. Development of algorithms and other processes like flow chart, plan of quality management, planning action as a result of consumer approval. It concludes that algorithm reduces errors, and effectively describes the process of production.

5) Zdraveska Brankica et-al have done research about his paper emphasizes the quality improvement by focusing on the automotive industry. And the APQP technology has been used for this. In order to increase the quality of the product, the emphasis is on improving design quality first, and DFMEA, PFMEA and MSA technology have been used, because most customer need and satisfaction is necessary for improving product sales. And to appreciate such a customer, the company is focusing on the quality and service of the product. It has been concluded that the company is focusing on Six-Sigma, Quality Functional Deployment and Lean Product Development to increase the quality of the product. APQP technology also controls its cost with the quality of the product, due to which the revenue of the company increases.

6) Kapil Mittal et-al have studied about the emphasizes the quality of improving SME die casting unit. It says that APQP technology is just helping me to develop new product. Researcher has stressed the need to increase the quality of the product with a lower cost. From this it turns out that the APQP is a versatile and potentially strategic technique that we can use to

improve the product. In this, the design of the mounting bracket of the engine has changed the quality of the product by changing it. This conclusion is that the reason for the rejection of the mounting bracket is not the operator or the instrumentation. After applying APQP technology, the DPMO level of EMB has been worked out. So that the quality of the product can be increased. Simultaneously, the efficiency of EMB can be increased by using the APQP technology correctly, for older products as well as for new products.

7) Bogdan Chiliban has also studied on his paper using APQP method, under which the quality of the product and development of process by using PERT, PFD and Critical Path method. Because of which customer satisfaction, company or organization's performance increases. It has been concluded that using APQP activities and sub-activity, we can control the cost and flow of the product.

8) M. Bobreka and M. Sokovicb have discussed In his paper, the researcher has focused on the design of the product of the automotive industry, and has told the APQP and the QMS concept to standardize the quality of the used part in the industry and design. It has been concluded that if the design of the part is improvised, both the partial efficacy and effectiveness will increase. As well as the efficiency of management will also be counted.

9) Praveen raj S and Rajkumar S B have conducted In his paper, the people coming into the company's quality and cost improvement in front of the company have been told. Using the APQP technology, the problems of any additional cost or investment have been overcome. So that the customer can be Satisfied By developing this technique, it can easily reduce the errors and produce the product effectively. It has been concluded that due to this technique improves productivity and communication between the communication, customer and organization in the team. And use QMS technology then reduces part rejection and error rate of Material Will Be Controlled, and Alto material traced and optimized easily.

10) Paraskeva Wlazlak et-al have studied about his paper has been informed of the supplier and OEM relationship as well as the new product development (NPD) process, the meeting is meeting, Standardized Work Model, Component Specifications, SQA and Quality Assurance Document by Supplier on Critical Points. Have given. It concluded that the role of supplier, managerial value, specification of product, quantitative analysis, suppliers innovative new product design, supplier readiness aspects.

11) Francisco Rafael and García Monterrosas have conducted the study APQP Technique has been used to improve customer satisfaction and quality of this paper. For which the product quality and process improvement has been improved with the improvement of automotive product for improvement, planning, design standards, process changes and corrective action. It conclued that the part I PFMEA technique is identified by doing it and it is corrected by corrective action, so that the quality of the product improves, this technique or strategies can also be produced by me in the production company dailylife work.

12) Mr. A.P.SHROTRI et-al have done research about his paper has been emphasizing Customer Satisfaction, and it has been mentioned about new techniques and strategies for stabilizing it. Along with that, the cost and quality of the new product has also been focused. Various Traditional Processes and New Emerging Trends for New Product Development have been compared. It has also been concluded that your technique for product development is one of the best method which can reduce the all factors and then output the result after applying the output to the previous input technology. QFD, SIX SIGMA and LEAN Technique have been used so you can get the customer satisfied.

III.CONCLUSION

After studying the outcomes obtained by various researchers, it can be concluded that the customers need, product quality, product cost, suppliers of raw material, internal & External factors of organization are the significant factors governing the product development. To reduce this factors various product development technique like Six-Sigma, QMS, QFD and Lean product development are invented. The organization are trying to develop these methods as per their requirement, applicability and economical conditions. At present time advanced product quality planning is one of the best techniques for reduce the waste and develop the product in now days. It incorporates all the benefits of Six-sigme, Lean product as well as QFD.

IV.PROPOSED WORK

From the above discussions it seems that it has now become necessary to apply the APQP methodology for product development For SME's. The proposed research work aims at careful study and development of a existing product using the methodology of APQP for a SME. The idea of proposed work has been discussed with Mr. Ashok Jain (Owner), Siddharth Pipe Factory Pvt. Ltd. Sagar. The company is an SME engaged in manufacturing of PVC pipe. He has supported that the idea of reduced waste in company using APQP methodology will be beneficial for SME's.

V. ACKNOWLEDGMENT

I would like to express my sincere thanks to Mr. Ashok Jain (Owner of Siddharth Pipe Factory Pvt. Ltd. Sagar) for supporting the ides to implement APQP methodology for product development in their industry. Also I would like to express my thanks to the employees of the said organization for providing me required assistance for the proposed work SPFPL, Sagar India.

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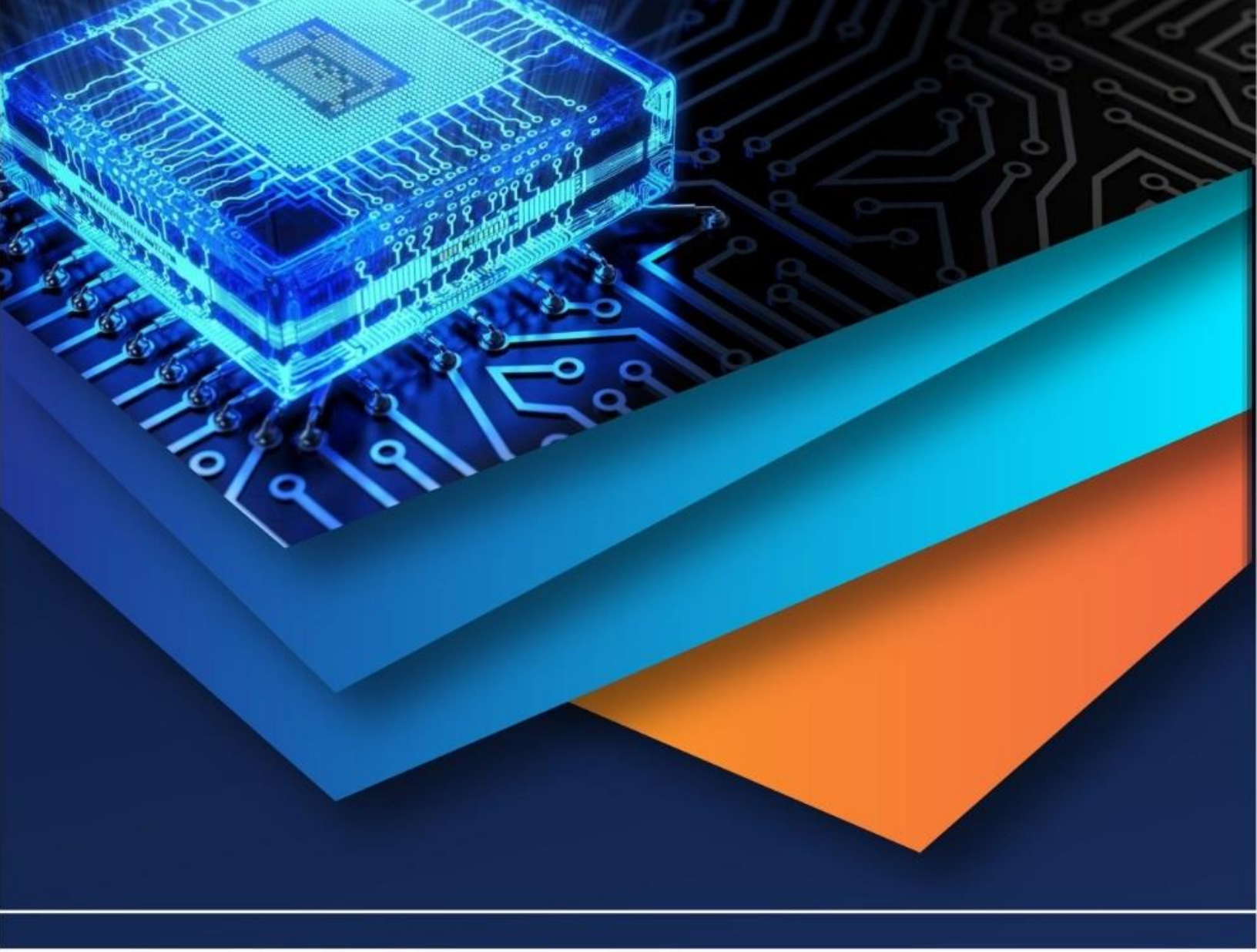

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