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## Gap analysis and optimization of process involved in product design and development by integrating enterprise resource planning & product lifecycle management

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### Abstract

The present trend practiced by product manufacturing industries is to stick to basics of management principles in serving internal and external customers herewith to attain a good outcome at end of every process. System Application & Product is one such advanced tool that helps in managing customer service, products production planning, optimization etc. On the other hand Product Lifecycle Management is another tool that assists the industries in managing the entire life cycle of a product by which the new challenges in the product development can be dealt with ease. Automobile industries use management system/tool to organize recent advancements in production and manufacturing process and to produce a product which satisfies customers and brings reputation to industry. This paper deals with utilization and implementation of two existing concepts: SAP & PLM a new dimension in handling the production process and life cycle of a product can be unlocked which eventually benefits in acquiring the customers support, attention, ease in planning the manufacturing design process, optimizations, material management, achieving good results in sales and distribution etc. The obtained results showed a significant improvement in the entire product design and manufacturing process with the best quality.

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## 1. Introduction

An effective method to design and develop a product is the most sought one at all time periods. As the time moved on globalization along with lot of competition among the industries, which eventually led to the development of products and their design in their purpose. When product began to evolve from their original designs/patterns the customers began to evolve. The role played by customer began to change from the receivers of the product to the main factor that determines the success of an industry. They became the sole purpose for the existence of competition and the evolution of various trends. Since almost everything evolved from their initial state the method of organizing too took a leap forward by opting new techniques to manage the vast design, manufacturing and production processes. The new techniques required the computer hardware and software such as SAP, CIM etc. These became the modern trends and the most recent trends being combining the different techniques together to obtain a multipurpose tool that serves every possible purpose [1]. Several works related to such hybridization of the techniques have already been reported by eminent research scholars. A lot of concentrated research has been applied for automobile industries, metallurgy industries, aircraft industries etc. But there exist a lot of other industries which haven't been given a chance of utilizing the modern hybrid tools such as SAP. PLM is followed but not at higher degrees. Pump designing and manufacturing units are one such unit. Though the top 10 companies of the global market use advanced strategies and monitoring systems there are a plenty of other pump designing and manufacturing industries that require an advanced hybrid tool that supports them both in managing, designing, manufacturing and production. This paper deals with the use of SAP integrated with PLM in a pump industry for designing and manufacturing of a water pump with validated results.

## 2. SAP-PLM in Industries

System Application and Products is a tool utilized by almost every business organizations to handle their internal and external process in an efficient way [2]. They are used in handling the negative outcomes of a system by prior planning and efficient management. SAP is generally not a tool that removes all the drawbacks of a system but it does provide the flexibility in making necessary changes in the existing system to remove the drawbacks. Also SAP is not a one click-for solution software type. It is a complex process which requires every member of the enterprise to be part of it, contribute and perform efficiently for the most desired output. SAP provides an enterprise an easier way to deal with the complex processes in their product development by offering a Single entry point for information, Simultaneous processing of inputs from various users, online updates, Common Data Base, Operational aspects, simultaneous financial and management satisfaction. At present the most recent trends have been the integration of SAP with Product Lifecycle Management. SAP is configurable to suit the business needs of the company. The SAP Product Lifecycle Management (SAP PLM) application provides the customer with a 360-degree-support for all product-related processes - from the first product idea, through manufacturing to product service. SAP PLM is part of the SAP Business Suite, which gives organizations the unique ability to perform their essential business processes with modular software that is designed to work with other SAP and non-SAP software. Organizations and departments in all sectors can deploy SAP Business Suite software to address specific business challenges on their own timelines and without costly upgrades.

## 3. Pump Industry

Pump Industries are one of the very complicated manufacturing and production sectors who are often pushed to face challenges by new customer requirements, change in globalization and economy. A pump industry designs and manufactures various types of pumps such as pumps for processing water, processing oil, air, sea water, chemicals etc. Hence they always face the problem of selective manufacturing and selective batch productions due to their small customer strength with varying degrees of requirements because there do not exists a plenty of oil or chemical industry that might require large number of pumps each year for performing their tasks.

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