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Recent Advancements in Manufacturing Era in India

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ABSTRACT

There is drastic change in manufacturing era. Earlier in mid of 19th century, people's were using handicraft techniques to manufacture the project. Gradually, machine age comes and people started using it and production increased drastically. Today, the competition has increased many folds. The customer's need not to be wait for the product and can get the product as and when desired.

Keywords: Advancements, Competition, Manufacturing.

I. INTRODUCTION

Competition in the market has pushed the manufacturing industries to make the product at economic cost and change the product style according to demand patterns [1-4]. In the mid of 19th century, people were using handicraft means for production and customer's would have to wait for the product. Gradually, with the advancements and introduction of machines in the market, production got increased and waiting time for customers was drastically reduced. After that, industries started working on reducing the different types of wastages like overproduction, transportation, motion, inventory etc. Now days, industries started using advanced manufacturing techniques like Computer Numerical Control (CNC), Electric Discharge Machining (EDM), Electro Chemical Machining (ECM), Abrasive Jet Machining (AJM), Ultra Sonic Machining (USM). There are advancements in every field of manufacturing industry. For instance, in design domain, latest and advanced software's are available like Auto Cad, PRO-E, CATIA, Uni-graphics etc. and analysis software's like Hyper mesh, NASTRAN, ANSYS etc. Simulation tools are so advanced that it give clear report to manufacturer's about the condition and other manufacturing attributes like speed, feed, time, surface finish etc. before manufacturing a product. So, it saves time as well as cost. Also, the industries are focusing on the use of automation devices like Programmable Logic Controller (PLC), Automated Guided Vehicle System (AGVS), and robotics etc. Although, there are some limitations of automation like high initial investment, unemployment but its advantages are magnanimous. Industries have started focusing on group technology i.e. parts are classified according to similarity in manufacturing characteristics.

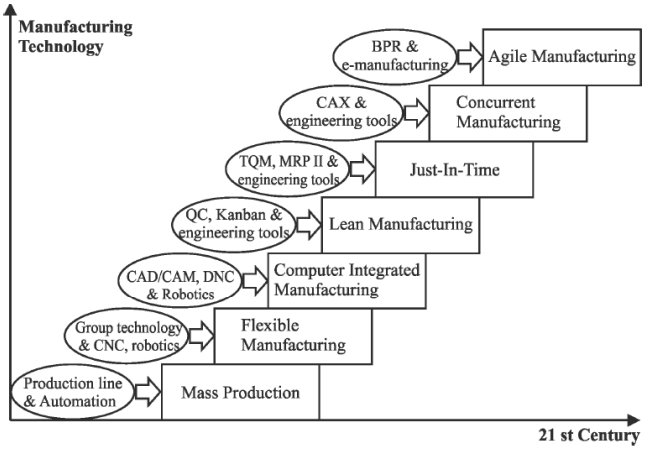

Figure1: Development in manufacturing technology [2]

II. Literature Review

Group Technology is used to reduce the manufacturing lead time and increasing the productivity of industry. In the recent scenario, using Flexible Manufacturing

System (FMS) has become the necessity of every industry. The customer's demand is highly volatile. To meet the fluctuating needs of customer's, industries are required to use technologies and strategies like FMS, Concurrent Engineering (CE), Rapid Prototyping (RP), Lean Manufacturing (LM), Agile Manufacturing (AM) and Just In Time (JIT) etc. The industries which don't focus on these strategies are lag behind. Ignorance of these technologies and strategies results in failure of industries. In the last few decades, new concept in manufacturing is introduced i.e. e-manufacturing. The term E-manufacturing focuses on complete automation of each and every activity of production process. Normally, time is taken in conducting a survey and collecting information regarding demand analysis. E-manufacturing concept focuses on synchronizing and optimizing each and every process which is required to manufacturing a particular product and all these are done in real time. [4], defined technology from three dimensions: apparatus, referring to the equipment itself; technique, referring to the skills and knowledge necessary to use the equipment; and organization, referring to systems and structures of control and coordination. [3], defined AMT as a broad spectrum of computer controlled automated process technologies. [5], described AMT more specifically as a group of computer-based technologies, including Computer-Aided Design (CAD), Computer Numerical Control (CNC) machines, Direct Numerical Control (DNC) machines, Robotics (RO), Flexible Manufacturing System (FMS), Automated Storage and Retrieval System (AS/RS), Automated Material Handling Systems (AMHS), Automated Guided Vehicles (AGV), Bar Coding (BC), Rapid Prototyping (RP), Material Requirement Planning (MRP), Statistical Process Control (SPC), Manufacturing Resource Planning (MRP II), Enterprise Resource Planning (ERP), Activity-Based Costing (ABC), and Office Automation (OA). [2], an e-manufacturing strategy provides direct information exchanges between manufacturing and Customer Relationship Management (CRM) systems and supply chain management systems.

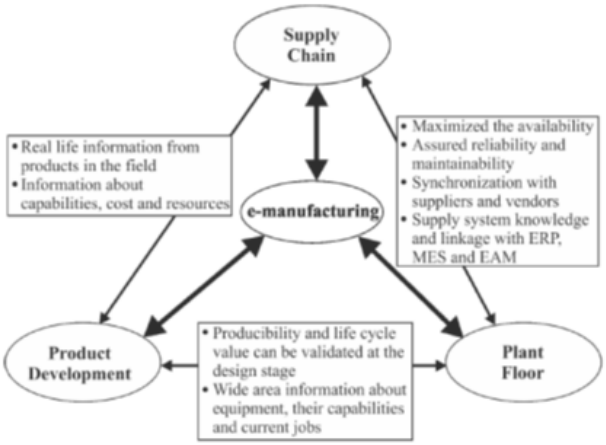

Figure 2: The transformation of E-manufacturing for unmet needs [2]

III. CONCLUSION

It has been seen that changing according to customer's needs and using advance and latest manufacturing technologies and strategies have become the necessity and to survive in the market. It results in increased quality of products, increased customer's satisfaction, better profitability, better sales, increased turnover, increased market share etc.

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