

Design for Manufacturing (DFM) – Increasing Your ROI

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Whether the issue is difficulty with product design, prototypes, creating a new product, or looking for a low cost manufacturing solution, both OEMs and manufacturing service providers need to work closely focusing their attention early in the design process to increase overall productivity, create high quality new or improved products, lower expenses, and increase return on overall project investment. Early evaluation in the design stage of the product lifecycle can not only greatly improve the functionality of a part, but simplify supply chain logistics, minimizing design to product delivery time.

Penn United has been working with companies to create innovative solutions for their manufacturing challenges since 1971. A team of design engineers and manufacturing personnel apply their experience with the initial part design to propose solutions for part aspirations early in the development cycle and identify possible problems with the requirements of critical components. Penn United has produced parts that have reached the Medical, Defense, Aerospace, Fluid Handling, Oil & Gas, Automotive, Energy, Electronics, Telecommunications, and various other markets.

Design for manufacturing, utilizing an experienced design team, increases return on overall project investment by creating reliable, repeatable, dependable products and avoiding costly product malfunctions. OEM product development teams working closely with manufacturing service providers and their experienced engineering and manufacturing product development teams will initiate communication of part requirements and create an open environment to exchange information enabling success of the project. An experienced development team can give the insight in selection of material types and grades to insure that the part can tolerate the stress, torque, friction and climate to which it will be exposed. Experienced design teams can determine critical part requirements necessary in the manufacturing of components and determine low cost manufacturing alternatives along with the selection of tooling materials. For example, a part that has been historically machined, cast or pressed may be manufactured as a stamped part saving costly manufacturing hours and resources. Parts that are currently produced as an assembly may be able to be stamped as one piece. Smart die solutions incorporating in-die assembly, machining, or joining processes can reduce secondary operations and costs. Plating process development can limit coverage zones and propose optimal plating solutions to reduce precious metal costs. Engineered carbide components and machined assemblies address issues such as erosion and corrosion resistance. Custom solutions, manual and automated, can be proposed for product assembly. Die simulation and prototype expertise to analyze tool and part design features can help characterize important design features and material properties for part production as well as identify finishing services creating further cost reduction. Using a design team to apply all of these vertically integrated manufacturing solutions throughout the manufacture of a part are critical in development of manufacturing timelines and defining key manufacturing points in greater detail. An experienced company cannot only manufacture your product, they can provide training to an OEM's staff to utilize their product to its full potential.

Another key component of design for manufacturing is a corporate focus on quality throughout the entire manufacturing process. Choosing a design team that offers vertically integrated manufacturing

solutions with a focus on quality will further increase your ROI over the long term of the project. A company that hires quality minded individuals, and trains them on quality systems through the use of various tools including LEAN manufacturing gives the design team a greater understanding of how to meet rising expectations and quality goals in part production. Value added quality services help customers set up PFMEA's, control plans, and fully computerized documentation systems customized to their needs.

The manufacturing industry is continually looking for ways to reduce manufacturing costs while increasing part quality to compete in a global marketplace. The most important part of choosing a company to be part of your team is reviewing their internal processes, meeting the team, and determining if their processes and philosophies are a good fit. A company that offers vertically integrated services and has the ability to supply many phases of the product life cycle can be critical to increasing ROI in the long term. Design for manufacturing will increase the quality of a product from the beginning of investment. The end result creates high quality product, nurtures supplier relationships, increases your return on investment, and integrates manufacturing processes from end to end.