

CHAPTER 5 DISCUSSIONS

The number of success stories of companies using DFA techniques in their product designs are endless. Use of DFA guidelines in product designs are increasing as companies strive for excellence and compete with each other for a bigger market share.

Most of the DFA guidelines seem overly simplistic and common sense. However, designers often tend to overdesign and forget the simple rules of good product design. What DFA attempts to do is to reemphasise these simple rules and make them principles of good product design. The main driving point of DFA is "minimum part count and maximum part reduction". The benefits of part count reduction are many and they have been discussed in much detail.

Products following DFA principles of assembly can be easily automated. No major redesign or investments need to be made if the product is to be automatically assembled in the future. Such flexibility of design can mean the success or failure of a product's competitiveness in the marketplace.

Several methods of determining product assemblability are available. The most widely used is the Boothroyd-Dewhurst method of calculating assembly efficiency. Assembly efficiencies enable the designer to quantitatively compare competing designs and also benchmark existing products. A quantitative scale is thus established. The part redundancy

principle of Boothroyd and other researchers will help the designer to identify unnecessary parts and design them out.

Cost is the main driver of all product designs. In chasing for assembly efficiency goals, the total manufacturing cost of the product should not be neglected. Redesign for improved assembly efficiencies should always take into consideration the total manufacturing cost viz. labour cost and material cost. An improved design may show reduced labour cost but the material cost may be increased after the redesign. Payback periods should be calculated to justify for the redesign. If a redesign involves a higher total manufacturing cost of the product, the payback period should be economical compared to the life of the product to justify for the redesign.