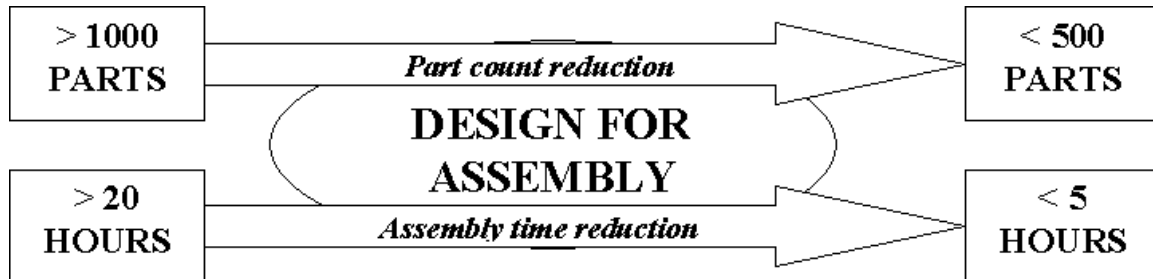


**Category:** Design for Manufacture and Assembly (DFMA)

**Example:** Labor content reduction in capital equipment (plasma cutting systems)

**Situation:** Large plasma cutting systems are complex electro-mechanical equipment, comprised of sheet metal, systems for handling gas, water, and coolant, control systems for the high-amperage electrical current that forms the plasma arc, and assembly hardware (e.g., fasteners).



**Problem:** Labor content over 20 hours per system. Corporate goal was to reduce assembly time by 50%.

**Action:**

1. Built units for a week to develop a hands-on understanding of the major concerns of hourly employees
2. Created training materials specific to company products, using Boothroyd/Dewhurst DFMA materials as the primary guide
3. Trained Engineers and Design staff in DFMA concepts
4. Recorded data and comments as Design staff built a unit to also get a hands-on understanding of the product's assembly difficulties
5. Developed evaluation metrics for scoring assembly difficulty
6. Conducted rolling reviews of subsystems to identify and push reduction of assembly difficulty
7. Focused not only on part count reduction, but on reduction of assembly difficulty and ergonomics concerns

**Result:**

1. System part count reduced over 50% (one subsystem reduced from 88 to 16 components) and total labor time reduced over 75%
2. Since product was launched in late 2003, Labor & Overhead cost savings for the new product have totaled over \$5 million (compared to the prior model)
3. Increased profit-per-square-foot by 300% for this product family