

## A Good Idea Whose Time Has Come – Design for Assembly

A one-piece I.D. badge clip was held up before an audience of engineers, planners and assemblers who had gathered for the Design-For-Assembly (DFA) workshop summary presentation held in Rockford. The clip was in the hand of Dave Archer of Munro and Associates, an organization selected by McDonnell Douglas as their DFA trainer of choice. Archer invited everyone in the room to inspect the small white clip in his hand, which was made in one-step process utilizing injection molding. He then compared the plastic clip to the metal clip used on a Sundstrand I.D. badge, pointing out that the metal clip was made up of 10 parts and required multiple assembly activities.

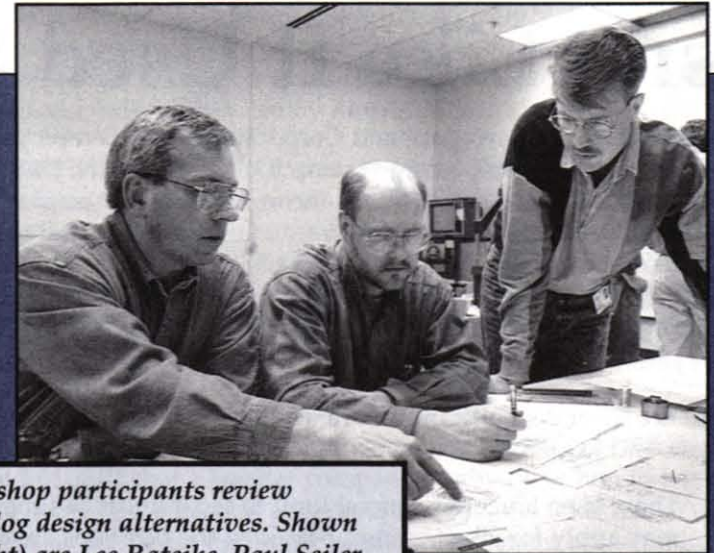
Citing the clip as a successful example of the DFA concept, Archer said that simplicity is the “golden bullet” of opportunity, and that the approach of DFA is “to eliminate parts and steps rather than automate their assembly, and to simplify any activities that remain after elimination.”

For the members of the three DFA workshop teams in the room, representing an Integrated Product/Process Development (IPPD) style cross functional group of office, engineering and shop employees, Archer’s comments were an affirmation of what they had learned hands-on over the past week.

The teams presented the results of their training at this meeting. Each team was assigned the task of improving the “buildability” and cost margins for one of three preselected Sundstrand products: a generator control unit (GCU) from an Airbus A320 electrical power system, an integrated drive generator (IDG) from a C-17 electrical power system, and a C-17 hydraulic log sub-assembly. Interestingly, the hydraulic log was chosen because of its perceived “sacred cow” status within Sundstrand. Archer explained that although companies were generally accepting of new ideas for growth products, they tended to shy away from “messing” with the traditional technologies of certain core products, or “sacred cows.” He said this is especially true of companies who dominate their markets.

In consecutive presentations, the teams reported significant opportunities for reductions in parts, labor and tooling expenditures when DFA was applied. The “higher risk” options promised the most return on effort, in many categories projecting improvements of over 50 per cent. As a practical matter, the low and medium risk options were discussed with more detail, with easily demonstrated returns of up to 25 per cent in many categories.

All of the teams were energized by the experience and wanted to encourage implementation of DFA for the next new design program, such as the European Fighter Program. Archer suggested the initiative should start slowly and be organized around selected product lines, where improvement seems most obvious and where most of the product is truly “available for change” in the Company culture. “If you didn’t hear anything today that makes you nervous,” he said, “we’re not getting the idea across.”



*DFA workshop participants review hydraulic log design alternatives. Shown (left to right) are Lee Rateike, Paul Seiler and Brent Klopfenstein.*



*At a Design For Assembly (DFA) summary meeting, attendees demonstrate the relative difficulty of hand assembling traditional and DFA sensitive designs for latch mechanisms. Shown are (left to right) George Sorensen, Bill Puskac, Dave Archer, Vic Benson and Ken Eitenmiller.*