



Remember DRAG RACING?

If you had an automatic, you'd keep your left foot on the brake and build engine RPMs with your right. Smoke would pour in agonizing wails from the rear tires until the light shifted green. Then one foot would fly off the brake while the other squeezed the gas pedal—balancing tire spin with engine power until the track ahead dissolved in a blur.

If drag racing were a metaphor for winning in this global economy, however, your non-DFMA competitor in the next race lane would still have his foot on the brake—endless reams of smoke billowing from melting tires. Advantage yours! *DFMA is leading the way to results.* Just point your car and hit the gas.

Best regards,
John Gilligan
President



DFMA in Practice

Directed Technologies, Inc. (DTI), of Arlington, Virginia, is a technical consulting firm that evaluates new and emerging technologies for the government and for industry. The company has researched hydrogen infrastructures and applications since the early 1990s. Projects have included reformer technology and cost-effective fuel cells. Recently, the Department of Energy (DOE) contracted with them to design an efficient, cost-effective hydrogen fuel cell system for use on board automobiles. There was a unique twist to this undertaking: The DOE also wanted DTI to extrapolate from the present-day system to create systems as they might be built in 2010 and 2015.

To achieve their goals, the engineering team at DTI followed a rigorous, four-part methodology:

1. Research—reviewing literature, looking up patents, and interviewing engineers and experts.
2. System modeling—in a process-modeling package that enabled DTI to establish a detailed model and to create specifications and a bill of materials for the system.
3. Component Designing—in 3D CAD, based on the system model and bill of materials, with enough detail for accurate costing.
4. DFMA Analysis—to cost the system thoroughly and to select optimum designs and processes for manufacturing individual components.

DFMA software and methodology were essential to this project. For instance, a DFM analysis was particularly important in choosing a manufacturing process for the bipolar plates of the fuel cells. The software helped DTI engineers compare a number of different stamping processes before selecting a four-stage progressive die.

With the help of DFMA, the design team at DTI was able to meet some of the stringent cost goals set by the DOE for hydrogen fuel cell system designs. For the 2006 fuel cell stack, for example, the DOE set a cost target of \$70 per kilowatt. The DTI team brought their design in at an estimated \$67/kW.

To read the full-length case study, please **click HERE**.



THE 2008 INTERNATIONAL FORUM

ON DESIGN FOR MANUFACTURE AND ASSEMBLY

THE PRODUCT DEVELOPMENT CONFERENCE ON DFMA BEST PRACTICES OF THE FORTUNE 1000

Are you ready for a road trip? Take an early summer break and come to the 2008 International Forum on DFMA, being held June 10-11 at the Crowne Plaza Hotel, Providence-Warwick, RI. This year's Forum promises to be one of the most intriguing yet.

Paul Teague of Purchasing magazine will give a keynote speech titled, "Partners in Design: How Purchasing and Engineering Connect for Breakthroughs in Product Development." The speech will explore the benefits of predictive costing over price negotiation late in development. Other presenters will explore disciplines as diverse as rapid prototyping and manufacturing, lean value stream costing, and how DFMA fits with PLM. In a special discussion based on the 2007 DFMA Downstream Survey, Nick Dewhurst will lay out the evidence for DFMA's historical role in creating profits across the manufacturing organization.

And, of course, there will be the usual groundbreaking DFMA applications. Last year's presenters documented millions of dollars in savings and new competitive advantages for their companies. This year the presentations range across industry—from electronics to communications to aerospace, from OEMs to suppliers—demonstrating the broad variety of successful DFMA implementations. For more information about the DFMA Forum, [click HERE](#).



Worth Reading

"Accounting for Lean Tastes," from the September 2007 issue of IndustryWeek, explores the growing support for lean accounting in manufacturing—particularly to document the activities of lean manufacturers. [Click HERE](#).

"China's Factory Blues," from the March 27, 2008 issue of BusinessWeek, chronicles the recent woes of China's boom-and-bust manufacturing cycle. For an eye-opening take on what has followed the off-shoring surge, [click HERE](#).

An article in the April 21, 2008 issue of Design News details the role that magnesium and aluminum are playing in reducing weight on American automobile designs. [click HERE](#).

Minimum Part Count

"There are areas where you can't possibly replace the human being," Geoffrey Boothroyd says in a recent interview about lights-out automation. Decades of research into DFA, including robotic assembly, have given him in-depth knowledge of the advantages and limits of automation. To read a transcript of the interview, [click HERE](#).

DFMA News Briefs

In April, Design News published an article detailing how the LeCroy Corp. used DFA to eliminate two-thirds of all parts, cables and fasteners from an oscilloscope top box, significantly reducing assembly times. To read the article, titled "LeCroy Takes Complexity Out of the Box in Redesign," [click HERE](#).

An article titled "Measuring DFMA Savings" appeared in Automation World in March. It quotes DFMA users Mike Shipulski of Hypertherm and Jay Mortensen of KPMG. [Click HERE](#).

You can read a column by Editor Paul Teague of Purchasing magazine that cites Jay Mortensen of KPMG and George Valaitis of MDS Analytical Technologies. The column, titled "Commodities prices may be high, but here is a way to control other costs," also discusses the 2007 DFMA Downstream Survey. Paul, who has written extensively on DFMA in the past, will be the keynote speaker at the 2008 DFMA Forum. [Click HERE](#).

Manufacturing Engineering Senior Editor Robert Aronson includes DFMA software in an overview article titled "Offshoring – Pleasures and Pitfalls" that appeared in the January 2008 issue. [Click HERE](#).

Articles describing how Directed Technologies, Inc., used DFM to choose between stamping processes for fuel-cell plates appeared in The Stamping Journal and Designfax.

