



The Lightbulb Experience

What is it about autumn that turns everyone into a student again? As if by magic, there's fresh energy to confront unknown intellectual territory. Even people who haven't stepped into a classroom in years start to anticipate the pleasure of learning something new.

I've seen this energy take hold in DFMA workshops plenty of times. Teams of engineers journey through an understanding of cost reduction through product simplification. Once they begin to apply the concept to their own product assemblies, and to recognize the cost savings associated with redesign, the aha moment occurs.

The arrival of insight is exciting. It's the spark that sets off real innovation. If your design project could benefit from a lightbulb experience, maybe it's time for a DFMA journey.

Sincerely yours,
Nick Dewhurst

Executive Vice President



DFMA in Practice Good Design Is Brewing

Access Business Group of Ada, Michigan, develops, manufactures, and distributes a comprehensive range of durable goods, including patented water treatment and air filtration systems, plus an award-winning coffee maker. Distinctive features of the Kahve Coffee Maker include a spinning brew basket and closely controlled water temperature. A motor turns the spinning brew basket.

In the initial design the motor was located at the base of the machine and was attached to an elaborate pivot and holding system that extended up through the unit. This motor-powered assembly would turn an O-ring under the outer rim of the brew basket, spinning it quickly to render uniform coffee extraction. Unfortunately, the large size of the required motor support and drive system made the Kahve look too bulky.

When they analyzed the design using DFMA, the product engineers realized they could reposition the motor higher on the device, closer to the power destination. They switched to a smaller Mabuchi motor, which needed less power and maintained the sleek, elegant lines most consumers expect from luxury design. "DFMA software systematically challenges engineering assumptions," says Rick Good, research scientist and process engineering group leader for Access. "It freed us from a basic misconception that a motor had to be positioned at the base."

Access applied three rounds of DFMA to the coffee maker design. At the concept stage, they tested a preliminary bill of materials and benchmarked products from Krups and Braun with comparable price points. The second round of DFMA occurred midway through development after the motor was raised. The third round fine-tuned the design. In all, part count dropped from 122 to 81, and assembly time fell by 40 percent.

Once it hit the market, the Kahve passed a taste test from some tough customers. It was the only machine of its kind endorsed by the Specialty Coffee Association of America, the world's largest coffee trade association.

To read a longer version of this case study, please click [HERE](#).



DFMA Forum News

In June, a large audience of decision makers from dozens of engineering organizations enjoyed two days of lectures, discussions, and networking at the 2006 International Forum on Design for Manufacture and Assembly. Keynote presenter Robin Cooper, from Goizueta Business School, kicked off the event by exploring the challenges of target costing for product development. On the second day, a panel discussion yielded frank talk about the trust required to support effective product costing across the supply chain. Other presentations described DFMA applications in diverse industries, including aerospace, automotive, energy, defense, medical, and electronics.

Joe Ogando, senior technical editor for Design News, offers his thoughts about the 2006 Forum in an online article titled "Advice for DFMA Users." Please click [HERE](#) to read it.

DFMA News Briefs

Lou Travella, of Design4Excellence, describes an interesting DFMA case study in an article for *Automotive Engineering International* and *Off-Highway Engineering*. Volgren, a bus and coach manufacturer in Australia, redesigned an air-conditioning ducting system for a line of vehicles, which helped them eliminate an expensive outsourcing arrangement and streamline related systems. Please click [HERE](#) to read the article, and scroll down to page 6.

In an article in *Mechanical Engineering* titled "Staying Alive," editor Alan Brown features BDI customer Mercury Marine's use of DFMA to redesign a boat engine. Moving to a new material helped Mercury cut costs and keep manufacturing in the USA. ASME members please click [HERE](#) to read the article.

Two "cost warriors" from Harley-Davidson explain the importance of DFM Concurrent Costing software for staying competitive while meeting customer expectations for improved performance. Please click [HERE](#) to read the article.

Recommended Reading

DFMA pioneer and author Geoffrey Boothroyd kindles a back-to-school spirit with suggestions for good reading. Surveying his own bookshelf, he selected the following titles for professionals to investigate. All are available from Amazon.com.

- ▶ *Product Design*, Kevin Otto and Kristin Wood, Prentice Hall 2001
- ▶ *Mechanical Assemblies: Their Design, Manufacture and Role in Product Development*, Daniel E. Whitney, Oxford University Press 2004
- ▶ *The Mechanical Design Process 3e*, David G. Ullman, McGraw-Hill 2002
- ▶ *Engineering Design: A Systematic Approach 2e*, Gerhard Pahl and Wolfgang Beitz, Springer 1999

Minimum Part Count 2006 DFMA User of the Year

Congratulations to Mike Shipulski, director of engineering for Hypertherm, Inc., who was named 2006 DFMA User of the Year at the



Forum conference. Boothroyd Dewhurst, Inc., gives this award annually to a customer for implementing DFMA successfully within their own company and for helping to promote DFMA to the product development community as a whole.

All Questions Answered Here

Does DFMA software accurately estimate the cost of precision machined components, especially low volume ones, and suggest lower cost alternative configurations or designs for such components? What are libraries in DFMA software? Is it possible to import a bill of materials or company database into DFA? How is material cost calculated for sand cast parts in DFM Concurrent Costing?

Boothroyd Dewhurst maintains a comprehensive online FAQ with answers to all your questions about DFMA software. You can find this helpful resource at <http://support.dfma.com/FAQ/index.html>.