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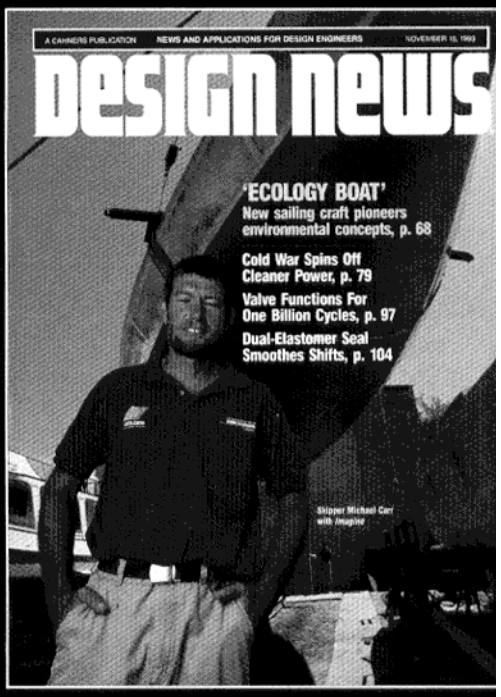
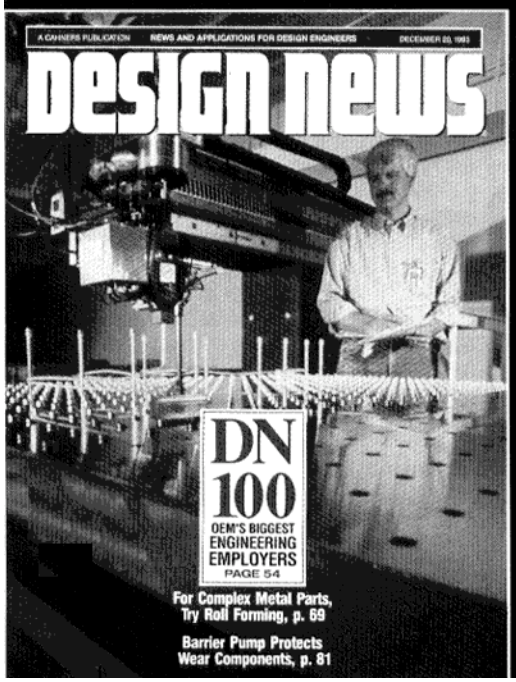
How metrics cut time-to-market

Using QFD to Develop Your Product





QFD: Applying 'The 80-20 Rule'

DESIGN NEWS

MANAGEMENT FORUM

Using QFD to Develop Your Product

Many new product efforts fail due to inadequate upfront market research and the lack of communication between the customer, marketing, engineering, manufacturing, and corporate management. Because new product development involves many people with different properties, getting everyone to work together can be difficult.

In many countries, major organizational functions develop independent product definitions without trying to reconcile their differences early in the process. This situation surfaces as a direct result of the "consecutive development" thinking in vogue for nearly 70 years.

Eventually, however, the requirements of marketing, design engineering, and manufacturing must converge to produce and market a viable product. Delaying this convergence increases cost and time, and may even decrease quality.

In response, firm are introducing new approaches to product development, such as concurrent engineering, simultaneous engineering, concurrent design, team based design, and concurrent product development. These approaches require an integrated perspective which coordinates the functional areas during the entire "inception to launch" process. Critical to this process is the early preparation of a robust product definition upon which all of the key players, including the customers agree.

Introducing QFD. Some firms use the Quality Functional Development (QFD) Process to translate customer requirements into appropriate technical requirements.[1] It provides a framework for evaluating tradeoffs among various combinations of design features. The output of QFD provides direct input into product definition documents, "customer requirements" and "product specifications."

QFD is not new. Developed in Japan in the 1970's, it was brought to the U.S. in 1986 by Ford and Xerox. Since then, Japanese, U.S., and European firms have adopted it. QFD supporters claim that where properly used, it reduces design time by 40% and design costs by 60%, while maintaining and enhancing design quality.[2]

The formal QFD process helps to systematically direct the efforts of all functional disciplines through a common process and towards a common goal: to satisfy the customer's needs. Its four matrices each relate "what is required" to "how the requirement will be satisfied." The first matrix translates customer requirements (voice of the customer) into product requirements-this matrix is often referred to as the "House of Quality." This matrix provides inputs for the preparation of the product specifications. Generally 80% of the QFD value derives from the first matrix, from which most QFD applications are limited.

The second, third, and fourth matrices can help when a company designs a new production process to produce a new product. The output from these three matrices are "part characteristics," "key process operations," and " production requirements," respectively.

Other benefits. As with other management tools, use of the underlying QFD principles on an informal basis can provide other benefits. But perhaps the major benefit is that it gets people thinking together. ❑

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[1]Bradford L. Goldense Group Inc., Cambridge, MA collaborated in this article's preparation.

[2] See, "How Puritan-Bennett used the "House of Quality" by John R Hauser, Sloan Management Review, Spring 1993. Article details QFD's application to enhance product sales and profit, satisfy customers and reduce design cycle time.