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Aerospace 1992

QFD and Aerospace: A Success Story, *Thomas B Buell, American Supplier Institute*. The principles of QFD were successfully applied at Rosemount Aerospace division in 1990-91, for a number of tasks in addition to product development and improvement. Case studies illustrate the many applications of QFD to the aerospace industry.

Use of QFD in Liquid Rocket Engine Power Cycle Selection, *Arthur H. Weiss, Kethleen N. Butler, Rocketdyne*. The National Launch System is a joint NASA/Air Force program to develop a flexible and reliable launch capability. The NLS will be a heavy lift launch vehicle which will provide assured access to space for significantly lower space transportation costs. The goal of the program is to reduce current costs without sacrificing reliability. The power cycle for this engine was selected by using QFD in new ways. The paper describes in details the use of the GOAL/QPC A-1 matrix, evaluation of the cycle selection criteria, the cycle values, a cross-check against the validity of the technique, evaluation of each cycle at the component level and the results of the three approaches and the team's recommendation.

Automotive 1992

The Utilization of QFD in the LH Powertrain Program, *Glenn W. Czupinski, Don H. Kerska, Chrysler Corporation*. The LH was the first major program at Chrysler Corporation to use QFD beginning at the total vehicle level and then prioritizing critical system areas for more detailed study. The LH powertrain project was one of five strategically identified areas requiring further analysis. As a result of the QFD study, four critical subsystems of the LH powertrain were identified needing extra design attention in order to ensure customer satisfaction. The paper discusses the challenge to the engineers and the major benefits of implementing QFD in this project.

Reducing Time to Market for New Products: QFD in Action, *Kevin O'Brien, Ph.D., Raychem Corporation*. This project illustrates how QFD can be used to significantly reduce the time to market required for the development of new products. Focusing on the automotive industry, the paper explains how this can be achieved using the matrix approach to analyze critical processes to determine critical process parameters and coupling the information with designed experiments and SPC to assist in improving the final product delivered to the customer.

Chemical 1992

QFD in the Design of a Pipeline Distribution Center, *James W. Cole, Ph.D., Process Management International, Gary Williams, Chevron Pipe Line, Co.* This paper reports a case study describing an effort to blend the voices of the customer (four populations) and the voice of the engineer, while developing multiple houses to support the design of a pipe line distribution center. The design of a supervisory control and data acquisition pipeline distribution center posed unique problems that QFD appeared to address. The new center to be build had to have increased capacity and better data information handling Design (construction) houses were developed to support the design of a new replacement control center. Concurrently, service houses were developed to support quality management of the control center.

Listening to the Customer, *John Crossley, The Clorox Company*. Understanding what the customer is really saying is not an easy task. Understanding how these customers' wants fit into the business needs present an even more difficult problem. But the success at translating the voice of the customer into actuality can be obtained. It requires developing a well defined process prior to any contact with the customer. Such a process is described in this paper.

QFD In Strategic Planning - A Study In Product Direction, *D. Lyman, International TechneGroup, Inc., R. Beusinger, J. Keating, Chevron Chemical Company*. This paper examines a case study in which QFD was used to help a business unit to choose what products to develop. First, the position of the business unit within the company was considered. Next the market issues, existing manufacturing capabilities, and the status of the company technology were considered. The paper discuss how all of these considerations were applied to the choice of product to pursue.

Consumer Products 1992

Taking QFD through to the Production Planning Matrix: Putting the Customers on the Line, *Diane M. Scheurell, Ph. D., Kimberly-Clark Corporation*. Most QFD efforts to date within the Divisions of the Kimberly-Clark have focused on the House of Quality. This paper discusses a program in which the company undertook the development of the 2/3 and 4th matrices for a new product and process. Barrier to forming the QFD team, the strategies used to get around the barriers, and the transformation of the QFD meetings from matrix development tasks to strategy development for the program are also discussed.

Defense 1992

Use of Correlation Matrices in Quality Auditing, *Alan B. Rothman, Department of Defense*. Traditional quality audits is based on a bean-out approach, where every deficiency stands alone, carrying equal weight, and contractor performance is judged solely on numbers of defects found, instead of a systemic view of the quality system. This paper proposes a new better way to do quality audit, in which correlation matrices were used to weigh individual findings against each area reviewed, to get a factor of relevance of deficiencies to the system. It also explains a method to track real-time audit performance and a 2-step auditing method under development.

Education 1992

Flowing Customer Demanded Quality from Service Planning to Service Design, *Greta Stamm, Educational Services Institute, Inc.* This paper reports a case study that used QFD for the design of a guidance program at a large Midwestern high school.

Using the QFD A-1 Matrix to Identify software Development Risks, *Walter M. Lamia, Carnegie Mellon University.* The Risk Program at the Software Engineering Institute is investigating the problem of how to manage the technical risks inherent in the design and implementation of large software-dependent systems. While DoD policy mandates identifying major risks in programs, little guidance exists, particularly for the software components. In hope to develop systematic ways of identifying and resolving technical risk, an adaptation of the QFD A-1 matrix is being used. This paper describes simplifications made to standard QFD practice to facilitate its use when only a brief time is available to interact with program staff. Heuristics have been developed with which to analyze the matrix to identify risks that threaten the success of a program.

General Industry 1992

Gaining the Strategic Advantage: Implementing Proactive Quality Function Deployment, *Satoshi Nakui, GOAL/QPC.* A former student of Dr. Yoji Akao and a TQM and QFD consultant to many Japanese companies, Satoshi Nakui shares in this paper the process of QFD and how to create matrices. It explains what is QFD, how to hear and interpret the Voice of the Customer and how to fine-tune the customers message (VOCT) and analyze them, together with the purpose and objectives of each phase.

Using Quality Function Deployment to Align Business Strategies and Business Processes with Customer Needs, *Bill Barnard, NCR.* This paper explores the use of QFD to align a company's strategies with the business processes. The author's recommended process to be followed when involving QFD in accomplishing these objectives is explained.

Quality Function Buying, *Vincent F. Elliott, Elliott Affiliates, Ltd.* Quality Function Buying (QFB) is a TQM, continuous improvement approach to meeting the needs of the customer through acquisition, rental, leasing and buying means. The paper describes the QFB which uses the structure of QFD.

Integration of Quality Assurance Into Business Functions, *Stuart Chalmers, KAIZEN Institute of America.* The U.S. companies have been bombarded with improvement processes over the last few years, such as Quality Circles, TQC, JIT, TPM and more. Many companies have tried to integrate this barrage by trying certain ideas out and blending them. This paper explains that these ideas are coming from the same base - the continual push to improve the way a company works. It shows that Kaizen, or continual improvement, is at the core of the thinking of all these new ideas.

Using QFD to Prioritize Design Resources, *Gary S. Wasserman, Wayne State University.* Designers need to know how to evaluate the costs and benefits associated with each design requirement, a planning model is introduced which makes use of the information content of the normalized QFD product planning matrix. This research paper shows the model is equivalent to an integer relaxation of the classical knapsack problem in operations research, thus a sample ranking of technical importance to effort required index is sufficient for deciding how to best allocate design resources.

QFD: A TQM Cornerstone For Quality Business Operations and Consolidation Factoring: A QFD Enhancement for Quality Business Decisions, *A. L. Weisbrich, ENECO.* QFD, if used appropriately, is proposed to be a principal cornerstone in the broad-based pursuit of a TQM culture. This paper attempts to show why and how QFD can be used to improve business operations. A specific QFD improvement, the Consolidation Factor, will be introduced and illustrated for enhanced QFD use in making comprehensive business decisions.

Customer Oriented Product Concepting: Beyond the House of Quality, *M. Larry Shillito, Eastman Kodak Company.* QFD and the HOQ may not always be the appropriate technology for designing products. Customer Oriented Product Concepting was specifically developed for designing new or revolutionary products and services. This paper explains this method, the steps to use and matrices.

QFD, Program Management and Product Development Process, *Mark D. Gavorr, Colgate-Palmolive Company.* The Product Development Process is one of the critical processes for any business. For many companies, this process needs to be formalized. Both QFD and Program Management are methods for influencing and improving the Product Development Process. This paper compares and contrasts the two methods and explores how they may be integrated into the Product Development Process.

The Customer Process Table: Hearing Customer's Voices Even If They're Not Talking, *Dale L. Nelson, dale Nelson Consulting.* The customer process table is a tool that can enhance the understanding of latent customer needs and lead to the development of differentiable products. This article describes the customer process table, how it works and how it can be used to enhance product development efforts.

Healthcare 1992

Hospital Marketing's Role in TQI: QFD, *Duane Loller, Meadville Medical Center.* With the advent of TQM programs in hospitals, the marketers have a unique opportunity to both further the objectives of marketing effort and develop a close link to operations. This paper examines the experience of the Meadville Medical Center with the development of a research system using QFD tools. The linkage of existing market research programs with a QFD matrix has yielded improved quality of customer research and improved acceptance of the output.

Multi-phase QFD Studies for Product and Services Development, *Joe A. Miller, The Focus Consulting Group, Inc., Armando Bombino, Baxter Healthcare Corporation.* When QFD is implemented as a structured component of a customer satisfaction driven TQM process, it helps link the basic concepts of TQM into the product and service development processes. Training cross-functional product or service development teams in multiple phase applications of QFD and facilitating those teams to rapidly develop all of the QFD matrices pertinent to the full cycle from concept through product introduction enables critical decision and information needs to be identified earlier in the development cycle. This is demonstrated through a range of applications in this paper.

Medical Device 1992

How QFD Saved A Company - The Renaissance Spirometry System, *O. Kaelin, P. Bennett, R. L. Klein, Applied Marketing Science, Inc.* The Boston Division of Puritan-Bennett, a maker of spiro-meters, faced a crisis in 1990. A competitor had introduced a new product priced at half of their product's current price. The company chose to fight and used QFD to develop a product that would meet this threat. This case study reports how a small company identified the Voice of the Customer, linked it to engineering characteristics, and then used that information to guide the development of the product that has saved the company.

Related Tools 1992

Synergy of Taguchi's Philosophy with Next Generation QFD, *Jonh Terninko, Responsible Management, Inc.* QFD has an improved understanding of market segmentation and the environment of application of the product or service. The technical evaluation in the house of quality is enhanced by Taguchi's loss function. The customers environmental impact upon performance can be reduced by robust designs. A single concept may be able to satisfy several customers segments using dynamic characteristics. With increasing levels of sophistication and refinements in understanding for QFD and Taguchi, it is time to take advantage of the synergy between these two systems of design.

Service 1992

Task Deployment of Service, *Richard E. Zultner, Zultner & Company.* The Task Deployment subsystem of QFD brings the power of QFD to any process, such as a service, which requires the execution of a sequence of tasks for customers. Process QFD is essential to QFD for Service, and is very useful for many process improvement applications.

QFD in Emergency Road Service, *Dr. Adnan Aswad, Diana I. Glowski, the University of Michigan - Dearborn, David J. Zink, Ford Motor Company.* QFD was applied for the improvement of emergency road service for an organization. Competitive service must be accurate, efficient, timely and courteous. A case study illustrates the benefits of using QFD in customer service.

QFD in the Service & Administrative Environment, *K. Hofmeister, American Supplier Institute.*

Use of QFD IN Market Driven Education Service Study, *Allen I. Sharkey, Thomas W. Suther, IBM Corporation.*

Software 1992

TQM and Software Engineering: A personal Perspective, *Barbera Liston, Equal Partners.* Software engineering and manufacturing can mutually benefit from each other's best practices and may even wish to benchmark each other in areas of key strengths. This paper outlines some of the similarities in the quality efforts in the two industries, offers techniques used in software development to obtain and verify the voice of the customer, and then looks at additional best practice tools and techniques used in software development. It concludes with an analysis of some of the critical issues pertaining to the voice of the public.

QFD as a Structured Design Tool for Software Development, *Takami Kihara, Charles E. Hutchinson, Dartmouth College.* This paper introduces the concept of QFD for software development utilizing QMIII (Quantification Method of Type III) to organize the complexity of requirements. A focus is given on the requirement analysis phase of the software development cycle, the most important phase of software development. Citing a case study, QFD is introduced as an approach for structured design of software and QMIII is introduced to facilitate organizing the requirements.

Team Building 1992

Quality Teamwork for Quality Deployment, *Bruce L. Dockstader, Ph. D. The Goodyear Tire & Rubber Company.* QFD requires cross-functional teamwork. But effective teamwork does not always happen by accident. Teams must be carefully organized and managed to obtain their best results. The model discussed here considers the organizational factors of team vision, mission, goals, roles, procedures, interpersonal influences and communications, as these factors contribute to team effectiveness. Also discussed are the five stages of team development: forming, norming, storming, performing, and ending. Application of the team building model can move a team quickly through the early stages to the performing stage.

Telecommunications 1992

QFD as a Process Redesign Tool: An AT&T Case Study, *Catherine (Kate) Mellina, AT&T Bell Laboratories.* This paper describes how an AT&T team used QFD in the redesign of a complex order fulfillment process. It explains 1) a set of QFD matrices useful for process applications, 2) how customer, benchmarking, and process data were collected and integrated into charts, and 3) lessons learned about applying QFD to the reengineering of a complex process.

Training 1992

Developing Company Specific QFD Training: A Customer Driven Approach, *M. Liner, Raychem Corporation.* This paper outlines the process used at one company to develop a culture-sensitive QFD training system and to integrate QFD methods into product development. The results of research into success factors are presented, and the system under development is described.

QFD Training Program, *Jude Heimel, AT&T Bell Laboratories.* One of the reasons for companies having difficulty implementing QFD can be attributed to lack of appropriate training support. This includes inadequate training, the wrong type of training, and too much training. AT&T Bell Laboratories Kelly Education and Training Center addressed this problem by providing a QFD training program using an integrated understanding of 1) TQM and organizational change, 2) adult learning models and instructional technology, 3) training management, and 4) QFD. The paper provides QFD champions on other companies with description of the development and delivery of AT&T QFD training.