



TRANSACTIONS FROM
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Aerospace 1990

Lessons Learned from a QFD on the Space Transportation Engine, *D. Lecuyer, Pratt & Whitney*. A QFD of the Space Transportation Engine (STE) was conducted to assist in defining the requirements for the main liquid propulsion engine for the Advanced Launch system. This paper describes the QFD processes that took place, the resulting outcome, several situations that arose during the course of the QFD project that adversely affected the QFD, how they were successfully addressed, and specific recommendations and lessons learned to assist in future QFD efforts.

Automotive 1990

Overview of Quality Function Deployment, *R. J. Dika, Chrysler Corporation*. Within the community of quality and reliability professionals, there has been an explosion of interest in QFD, study and discussion on the subject. This paper presents in a global way, a statement of what QFD is and a brief description of its universal elements, essential principles, and mechanics and definitions, with intent to set a common starting place for all Symposium participants.

Steering Column Concept Selection for Low Cost and Weight, *R. L. Begley, Chrysler Corporation*. Most engineers approach the "Design" sequence in fashions which they have learned while on the job. Very little formal training exists at the university level which translates directly into how an engineer might choose the appropriate design for the task at hand. Additionally, very few corporations offer courses instructing the engineering community on what techniques should be used to select an appropriate design and then to improve it. Through an example of the selection process for a steering column assembly experience at Chrysler, this paper demonstrates the application of QFD, Competitive Benchmarking and Value Engineering as very powerful tools for the engineer to use in the design process.

Ford - GE Blower Motor Project, *H. Wadke and A. Palumbo, Ford Motor Corporation; M. Cicala, American Supplier Institute*. Presentation slides on an application of QFD in the Ford-GE blower motor project.

Quality Improvement - Start at the Beginning with QFD, *W. H. Seleckman, Ernst & Young*. Most companies in the Automotive Industry are having great difficulty implementing SPC. They are typically satisfying Big 3 requirements but harvesting few benefits. This article discusses the rationale and impact of changing the approach for attaining quality improvement to employ QFD to focus more heavily on refining activities that must be done precisely. A series of lessons learned in instructing and applying QFD to automotive products are included. The linkage between QFD and other elements of the quality tool kit are explored.

Chemical 1990

Quality Function Deployment and Total Quality Excellence, *M. G. Gavoov, Colgate-Palmolive Company*. Colgate-Palmolive is in the process of adopting a TQM philosophy and style based on the teachings of Dr. Deming. A corporate Quality Office was established and staffed by experienced professionals from outside Colgate. Much thought has been given to the structure of the program entitled Total Quality Excellence (TQE). This paper reflects the thinking to date (June 1990) on the structure of TQE, the primary tools and techniques associated with it and the coordination of those tools and techniques. Special attention is paid to QFD within TQE.

Defense 1990

QFD on a Defense Contract, *P. L. Bersbach and P. R. Wahl, GM - Hughes Electronics*. This paper describes a real life application of QFD to a factory of the future in the Aerospace and Defense industry that is high rate low cost microwave hybrid manufacturing facility. More a diary than a historical account, this paper describes an application that is still in progress (the completion of the project is planned for 1992), the resources required by QFD, the QFD tools and matrices needed, and in in-depth look into the obstacles encountered, including ignorance toward QFD and the approaches used to educate all.

Energy & Utilities 1990

Quality Function Deployment at FPL, *J. L. Webb, Florida Power and Light, Inc. and W. C. Hayes, Qualtec, Inc.* This paper discusses both the macro and micro application of QFD at FPL. In service industries, it has always been difficult to identify customer requirements and then to evaluate the organization's performance in meeting them. FPL has successfully used QFD at a higher level to identify customer requirements and basic quality elements. These were then deployed through all levels of the organization into each job function. Through customer segmentation, FPL has also begun to identify more specific applications of QFD in service, software, and product development. The first example provided here describes the "Customer Needs Table of Tables" and its use in deploying their Corporate Quality Elements. The second example shows how QFD was used to redesign the way in which the company responds to customer requests at their regional phone centers.

General Industry 1990

Applying QFD in Various Industries, *K. R. Hofmeister, American Supplier Institute*.

Fanatic QFD User, *J. Terninko, Responsible Management*. This paper identifies many tools that responsible practitioners should use artistically to make QFD and quality initiatives effective. These include Taguchi, Control Charts, Group Dynamics, Fishbone Diagram, Process Decision Program Chart, and Fault Tree Analysis. Use of the tools is the core of this presentation.

Introducing QFD into an Organization, R. Stoy and D. McDonald, *Beckman Industries, Inc.* and James Naughton, *Expert Knowledge Systems*. This paper describes one practical way of establishing a supportive environment for the successful integration of the QFD process to the product life cycle. A concurrent QFD pilot project involving a management support team identified two organizational needs that would be crucial for the first development team's effort and the incorporation of QFD for any further projects. The first need was to satisfy the product development core team; the second was to establish the realistic expectations of the organization as a whole. Responses were formulated to these needs through the QFD methodology and many benefits were derived in the process.

What Do I Put in a QFD Chart? J. Cavanagh, *American Supplier Institute*. A four-page paper describing what data should be put in the QFD charts.

Management Aids for Summarizing House of Quality Information, G. S. Wasserman, *Wayne State University*. Management must be able to extract the vital information which is contained within the QFD product planning matrices, even though a single matrix may be composed of tens of thousands of cells. This paper proposes a useful graphical design that aids easy identification of the voice of customer priorities and conflicts. Hypothetical products case studies are used.

New Directions for QFD - Goal/QPC Research Committee 1989 Research Report, B. King and J. Moran, *GOAL/QPC*. Each year various conferences bring together speakers to describe a wide variety of continuous improvement tools that will enable companies to achieve "world class" status. These tools are important and certainly have their place in the quality improvement process. The tools alone, however, cannot provide a solution to needed quality improvement. Fundamental changes to planning and listening to customers must occur if a company is to become a strong competitor. This paper presents one of the TQM planning tools - QFD. QFD provides activities that bring together all required disciplines to work and plan the product or service development efforts in a highly disciplined, communicative, and effective manner. QFD's focus on the voice of the customer contributes to a company's ability to attain quality levels that provide a cost competitive position in the world marketplace.

Deployment Normalization, D. Lyman, *International TechneGroup, Inc.* This paper is an investigation of the mathematical processes contained in the QFD matrix. As you consider the logic of the techniques applied to your information, you can see that certain formulas introduce errors or distortions into the results. These distortions can account for the occasional feeling that the results of the importance calculations are close to correct, but not quite right. This paper suggests modifications to the formulas that correct the distortions and are consistent with the matrix logic. It also proposes extensions that help you gain further insight while keeping the information consistent.

Marketing Research 1990

New Technologies for Listening to the Voice of the Customer, R. L. Klein, *Applied Marketing Systems, Inc.* This paper focuses on the most recent advances in the technology and methodology to identify and structure the Voice of the Customer for use in QFD and other quality improvement programs. These advances represent a fusion of U.S. marketing science technology with the Japanese methodology resulting in a procedure particularly appropriate for use by American industry.

A Pilgrimage from the House of Quality to the Customer Cathedral, M. Lyons and J. Alexander, *Impact Group*. Presentation on the what and how of a "Customer Success System™" process, i.e. how a company should use QFD to organize sales, technical service and marketing and then link that with the internal functions of design, manufacturing and delivery in order to install a customer success-oriented interface.

Manufacturing 1990

Manufacturing Strategic Plan - QFD & The Winchester Gear Transfer, D. Calloway and B. Chadwell, *Rockwell International*. This paper demonstrates how QFD was used to help implement a World Class Manufacturing Program at a large manufacturing plant. The goal was established to achieve world class manufacturing, with the objective to streamline plant processes and reduce wasted effort. The paper provides insight about applying QFD to optimize the movement and relocation of a complete gear manufacturing process from one Rockwell facility to another, demonstrating the usefulness of QFD as a planning and prevention tool for improving an old design and manufacturing system.

QFD Planning Approach to a Supplier Quality Program, R. J. Pratt, *ARCAD Corporation*; G. J. Marcel, *Rockwell International*. The purpose of this project was to develop a process which could be used to establish and maintain an improved Supplier Quality Assurance (SQA) system. To date no SQA program has been developed based on the QFD planning method, and the author proposes just that in this paper.

Medical Device 1990

Incorporating Market Research into the Product Development Process, T. Domke, *GE Medical Systems*. QFD provided the structure and customer focus in this product development project at GE Medical systems. The product development team gained its strength through a cross-functional development team, structured design process, and marketing research. Customer involvement from the onset of the program contributed to the success of the project. The paper also describes Simultaneous Multi-Attribute Level Trade Off (SIMALTO) that the GE team selected. Presentation slides.

Service 1990

Quality Function Deployment at FPL, J. L. Webb, *Florida Power and Light, Inc.*; W. C. Hayes, *Qualtec, Inc.* This paper discusses both the macro and micro application of QFD at FPL. In service industries, it has always been difficult to identify customer requirements and then to evaluate the organization's performance in meeting them. FPL has successfully used QFD at a higher level to identify customer requirements and basic quality elements. These were then deployed through all levels of the organization into each job function. Through customer segmentation, FPL has also begun to identify more specific applications of QFD in service,

software, and product development. The first example provided here describes the "Customer Needs Table of Tables" and its use in deploying their Corporate Quality Elements. The second example shows how QFD was used to redesign the way in which the company responds to customer requests at their regional phone centers.

Software 1990

Software Quality Deployment - Adapting QFD to Software, *Zultner & Company*. A framework is presented for applying QFD to software based on the experiences of several projects at different firms.

QFD Integrated with Software Engineering, *M. A. Betts, Hewlett-Packard*. This paper is written to encourage people to apply QFD to software projects. The case presented here is Hewlett Packard's experience applying QFD to a Corporate Quality Information System project, PRIMA. The major point discussed are: the QFD domain, software engineering situation, life cycle, and the PRIMA project experiences.

Taguchi Method 1990

QFD and Taguchi Methods, *J. Quinlan, ASI*. Presentation slides on QFD vs. Taguchi Methods.