

MARKET QUESTIONNAIRE

TITLE -- YOUR NAME -- AFFILIATION

1. State the title of your book (with subtitle, if any), and your name and affiliation as you wish them to appear in our advertising.

YOUR READER

Please note: the better our marketing staff understands "what your reader is like," the better they'll be able to appeal to his specific problems and needs -- and thus motivate him to buy. In characterizing your reader below, please be as specific as possible in describing who he is, how best to reach him, his needs, and how your book meets those needs.

2. Describe the person(s) you had in mind when you wrote the book, specifying typical job title(s), functions, and responsibilities.
3. Give three examples of typical problems the reader described above currently faces on the job without your book to help him.
4. What other books of appeal similar to yours is he (or his company) likely to have purchased within the past few years?
5. To what trade publications, if any, is he likely to be subscribing?
6. Specify and explain the major benefit(s) he will get from your book. For example, how would he use it to:

a) save time and/or work	e) help meet competition
b) reduce his (or company) expenses	f) avoid costly risk or error
c) aid his decision-making	g) increase company sales or profits
d) improve on-the-job performance	h) other
7. Does your book also help him advance his personal career? If yes, please explain how it might conceivably:

a) put him in better line for promotion	d) help him see what others in his field are doing
b) improve relationships with superiors, subordinates, or associates	e) win him personal recognition
c) help stimulate his own ideas	f) other

If this question is not applicable, please explain.

YOUR BOOK

The following information is of utmost importance to our marketing staff in appealing to your reader "in his own terms." Please be as precise as possible. A statement such as "This is the most convenient compilation of needed information in the field" may well be true, but not in itself convincing without detailed explanation. Your answers to the following will help convince the reader your publishers know what they are talking about in terms of his needs.

8. Describe your book in at least 100 words: its purpose, coverage, importance.
9. Is your book primarily a practical work, or will it appeal to your reader's intellectual curiosity? Please explain.
10. Give a sentence or two summary of each chapter and include its title. (Please expand the most important ones, explaining why these should be of particular interest.)
11. What special topics or material have you covered which heretofore have not been treated in a work of this kind? (If these include significant recent advances in your specialty, please elaborate.)
12. What needs does your book meet that should make it a "must" for people in the field?
13. How does your book compare with others in its category? (Please list books that are competitive and tell how yours improves on each with reference to benefit to reader. Include also characteristic weaknesses in competing books which you have avoided.)
14. Which illustrations are best for promotion? (Please identify by figure number or caption two or three illustrations that best characterize your book and/or are graphically interesting.)

TRAINING AND EDUCATIONAL MARKETS

15. Is your book suited for training programs in industry? If so, please furnish the names and addresses of individuals to whom we might write for quantity sale.
16. List corporations, trade associations, societies, or other groups that might purchase your book in quantity, again providing individual names and addresses to whom we should write.
17. Does your book offer possibilities for college classroom instruction? If so, for which courses and why?
18. Could an intensive Seminar conference or workshop be built upon your book?

YOUR BACKGROUND

19. Write a brief biographical account of your career, stressing your qualifications for writing this book. Please attach a glossy photograph of yourself, 5 x 7 or 8 x 10, suitable for use in promotion.

PUBLICITY

20. Is there any significant relationship between the material in your book and events of current news interest? If your book itself is likely to have any intrinsic news value, please explain.
21. Please list professional journals and trade publications which should re-

TECHNIQUES OF VALUE ANALYSIS AND ENGINEERING
REVISED EDITION

1. Lawrence D. Miles---Retired
Originator of Value Analysis and Engineering Technology
Former manager of Value Analysis and Value Engineering
at General Electric Co.
2. Managers and men responsible for effective use of time and materials.

Presidents and General Managers responsible for competitive sales and suitable earnings.

Engineering Managers responsible for design^{of} systems, products or services which will thoroughly meet the customers wants and needs, still cost less to produce and/or operate than the work of competitors.

Manufacturing Managers responsible for decisions controlling competitive selection and use of equipment and personell.

Sales Managers responsible for providing customers wants and needs competitively and profitably.

Accounting Managers who enter decision making which controls competitiveness and profitability.

Procurement and Purchasing Managers whose decision making and actions directly effect the competitiveness and earnings.

Managers of Administrative groups or services, whose need is to achieve more of the services their constituents need and want for the human and dollar resources available.

Engineers who design products or systems to meet customers needs and wants competitively and profitably.

Buyers who have need or desire to contribute^{may} to their employees ability to compete, or increase earnings.

Students of Engineering, Manufacturing and Administration, who wish to become competent for high success in competitive enterprises.

3. Product costs are so high that he cannot sell competitively at a profit and he does not know how he can significantly remove costs without lowering quality or removing customer wanted and/or needed features.

The Administrative group is called upon for more and more services without a proportional increase in expendable funds.

The Engineer is given a maximum cost for competitive product he is designing and he does not know how to keep all quality and achieve that cost.

or system

4. Various books on Industrial Engineering.
Various books on Manufacturing processes.
Various books on Efficient Management, organization
and operation.

Also see copy of attached promotion sheet, just received,
about the new book "~~v-e-c-t-s~~" V.E.C.P.'s",

5. See Answer to Question 21.

6. He will find avenues of improvement he did not suspect.
He will more clearly see exactly what each dollar of cost
actually "buys him". He will find many that buy him
little or nothing. Not only he--but also his men will get
better solutions to their problems, better means at lower
cost for continuing work that presents no problem (other
than cost).
 - a) The disciplined thinking will tune his mind and the
minds of his men to "Exactly what they are trying to
do". He will be surprised by the clearer picture
developed--and by the increased effectiveness toward
that task. He may, as a result accomplish 25% more
and each task better.
 - b) The V A system is a professional system for reducing
his costs. Not only is it a disciplined thinking
system which allows the same managers and men to get
better solutions, but it is filled with sub-techniques
which bear effectively right into the task of keeping
all quality and significantly lowering costs.
 - c) The disciplined thinking system can be taught, learned
and used to get better answers to any kind of problem
or to better exploit any opportunity. It combines the
mind setting--"Exactly what are we trying to do"? with
depth information searching--"Exactly what is the
situation"? with effective creativity which produces
new alternatives.
 - d) For mental workers i.e., management and professional
people, the step by step disciplines of thought make
possible about 25% more accomplishment per person.
 - e) The system was created in order to deal with competitive
situations. Whenever it is essential to maintain all
customer performance and features and do so at lower
costs, or to provide more customer performance and
features without increasing costs, the V A system,
used more effectively than the competition will
accomplish it.

See
Page 2
supplement

NOW! —

DYNAMIC PROFIT IMPROVEMENT FOR YOU —

The key to brilliant Value Engineering — especially geared to increased profits from Government contracts but these amazing principles equally apply to commercial business.

• Power over obstacles to improved profit • Power to win competitive contracts
• Power to increase market share • Power to increase production • Power to meet schedules
• Power to win customer acceptance • Power to solve business problems.

All of these are yours — and more: Through skillful use of Value Engineering and Value Analysis — Learn how to have a successful Value Engineering program. Use the principles of

"Profitable Value Engineering through V.E.C.P.'s"

An American Ordnance Association Value Engineering Division Technical Report by: T. C. Connor, LTV Aerospace Corporation; W. B. Dean, Honeywell Corporation; R. L. Golden and W. T. Howell, The Bendix Corporation.

Don't be misled by the term V.E.C.P.'s. Dollar returns from Value Engineering Change Proposals were used as a convenient and discrete measure of success. But the identified principles and key factors apply to both commercial and defense oriented businesses.

In this book the authors, leaders in successful Value Engineering, reveal the secrets of success from a survey of 105 prominent U.S. corporations using Value Engineering. They now give you the key factors that will show you to activate a successful Value Engineering program, reaping the profits.

Yes this book tells you what the proven factors are. They will enable you to avoid the errors and pitfalls. You will save years getting started. Soon you too will be able to depend on the profitable results from this program.

Remember, to make decisions — how to organize, where to operate, skills needed, optimum investment for amazing returns — put to use the factors proven as keys to success. Do not delay. When you receive your copy of Profitable Value Engineering through V.E.C.P.'s put it to use immediately and reap the rewards.

Order your copy from:

American Ordnance Association
National Headquarters: Union Trust Building
Washington, D.C. 20006

_____ copies "Profitable Value Engineering through V.E.C.P.'s" @ \$7.95 per copy.
Check is enclosed for \$ _____.

Name (please print) _____

City, State, Zip _____

6. f) Risks of error are reduced because the disciplined thinking system greatly deepens the "Information", separates assumption from supposed information, searches effectively for more appropriate alternatives, and illuminates the decision making area with more than the usual knowledge.
- g) The customer function base which separates the customers needs and wants in to two types--Use functions and Aesthetic functions, then assists in determining exactly what the customer really wants, then establishes the appropriate cost of each (the value of the function) by meaningful comparisons, makes it possible to profitably make competitive sales.
- h) As a company grows, expanding the capability of the present management and professional people makes it unnecessary to locate, hire and pay salaries to added new employees. It also provides healthy growth and expanded responsibility, with expanded capability for present people.
7. a) Each person who learns and uses the disciplined thinking system with its scheduled "Mind setting," Creativity, and good alternative development will get better results on his mental task job. He will get good results sooner, and he can get suitable results on more difficult tasks than before. These are the ingredients of a happy employee, a happy employer, promotion for the employee and more good results for the employer.
- b) All experienced engineering, administrative, purchasing or management people know that progress toward changes which improve either performance or cost of a product or service is retarded by the ever present personal feelings of involved people. Experience has shown that the system of functional approaches used with the disciplined thinking steps goes a long way to make the task objective. It provides a meaningful and useful base for effective communication between superiors, subordinates and associates which promotes the objective which becomes common. It tends to create an effective team.
- c) The "best" idea is usually not thought of until many years later. Those who learn and use this disciplined thinking system, however, will much more often produce a very good idea today. This is because methodically setting the mind, illuminating the situation with more complete and more correct information, setting the precise problem to be solved, then applying intense creativity, provides realistic details of the need, structured time for creative involvement, planned idea development and a communicating, understanding environment of people who will want to use the idea for overall tangible benefit.

7. d) In competitive enterprise, what each must do both as to customer function and his own costs is basically determined by what the competition is doing in each.

The function identification, grouping, dividing, naming, classifying and evaluating procedures, together with the information search systems in the information step of the disciplined thinking allows each man to make more meaningful comparisons, and to more closely know what others are doing so that he may do what is essential to become or remain a leader.

- e) Men who learn and use the disciplined thinking system become different men. The system causes them to become more objective, to search more for facts, to depend more on facts, to pick the key issues, to set solvable problems, to develop good creative solutions, and to communicate in a common language with all involved people. Accomplishment, job satisfaction, reputation for achievement and promotion are all results.

8. It is practicable to provide high quality products for much lower costs, and for service and administrative groups such as government units, hospitals etc., to provide much more service at the same cost. To do so requires a different than traditional thinking system, based upon its own very specific parameters. It results in providing exactly what the customer needs and wants without making it necessary for him to pay costs which bring nothing to him.

The manufacturer of high quality products can continue his high quality, still sell in competitive markets at a good profit. The administrators of services can meet the needs for more services without requiring increased funds.

To achieve this, the book provides a step by step thinking system which can be learned and used by decision making people. It better utilizes the minds ability to make specific Search, to Create, and to Analyze. The system starts with clear determination of the decision makers purpose, proceeds with clear and specific determination of the users needs and wants, and provides step by step disciplined thinking which will result in providing it to him at lowest (for the time being) cost.

It is vital today to stop the trend or torrent toward lower quality products, and higher cost services; to make it practicable for good companies to continue to manufacture good products, and to sell them competitively at good profits. It can be done by improving specific thinking practices of those who make the decisions which either permanently "Lock in" costs, or make those costs unnecessary.

3. In services, it means increased service to constituents at the same cost.

In construction, it means more living for the user with lower mortgages.

In administrative practices, it means real purposes accomplished for much less cost.

In products, it means continued high quality with secure markets and good profits.

The disciplined thinking of the Value Analysis system provides these benefits.

9. This is a practical book born of a problem which was growing more serious, and still unsolved. Each technique grew from it's own need. Some manufacturers on some products and services had thinking processes in use which allowed them to increase their markets at the competitive expense of many others, and enjoy excellent profits. Others, to meet competitive selling prices, and keep some profit, reduced quality. Still others went out of business.

The necessary procedures, parameters, thinking and evaluating systems which would first determine precisely "What is Quality? vs What is Waste?", then keep all quality and utilize scheduled disciplined thinking to produce, select and develop alternatives which would have all quality but costs lower than competitors, did not exist.

The system that evolved included all of the techniques and approaches required to accomplish the task. Examples in the book show that by rejecting all cost that did not contribute to a use function or an aesthetic function which the customer needed or wanted, and by using the specific thinking system to establish and select the means for providing to him the functions he did want, 25 to 50% of cost could usually be ended -- with no decrease in customer functions, features or qualities.

When used by the reader it can add a needed dimension to his abilities and skills. He has had training and experience for years in making decisions regarding performance factors in his product or service. He has had to make constant decisions effecting cost, and has done the best he could. Now he will be able to handle cost oriented decisions with the same skill, dispatch and effectiveness that he has handled his performance oriented decisions. This gives him skill in the whole essential area.

10. The purpose of this book is to help the reader to keep all values and qualities in whatever he is doing, and to reduce all costs that do not so contribute. The Chapters are step by step unfolding of the technique and thinking pattern which will cause this result.

Chap.1 Concepts and Approaches of Value Analysis and Engineering shows the reader why so much un-necessary cost exists in everything we do. It is normal. The chapter presents the essential thinking system which will identify these often un-recognized, un-contributing costs. It sets forth areas for examination, to aid in identifying these costs. It identifies some factors which must have specific ~~xxxxxxxx~~ action to end the un-necessary costs which they continue.

Chap.2 All Cost is for Function. Although all the customer or user wants in a service or product is the proper Use and Aesthetic functions, the provider of that service or product has a multitude of costs which bear no relationship to customer function and do not contribute to it. This chapter teaches how to separate, identify and clarify the functions, first from the viewpoint of customer use, next from the viewpoint of fully providing them by more economical means. Step by step procedures for the latter include: separating into basic or second degree functions, grouping functions, unifying functions and their specifications and analyzing aesthetic functions.

Chap.3 Evaluate the Function. A new and vitally useful concept with its techniques was brought into being in the Value Analysis system -- Evaluate the function. This chapter teaches how to place a value, or worth, or appropriate cost in dollars and cents upon any function or group of functions by meaningful comparisons, of diverse nature. Since it does not take information from past practice it does not prolong the inclusion of traditional unnecessary costs. Means for evaluating single functions, groups of non-interacting functions, and groups of interacting functions are illustrated. Once functions are evaluated, this becomes a guide or measure, and results in achieving the functions for or near their value.

Chap.4 Problem Setting System. The precise problem which is to relieve the intense disciplined thinking, to follow is very important. Here the reader will learn by example how the problem is divided into "Mind" sized steps, each of which is solvable, and the sum of which solves the major problem and meets the whole need.

Chap.5 Problem Solving System. This "Landmark" chapter teaches the precise thinking system which will identify costs as unnecessary, and create alternatives which have all customer wanted qualities and functions. It starts with the correct problem which has been "set" in chapter 4. First it must tune the minds of all who are working together on the program -- to exactly what they are trying to do, next it guides in the four ~~steps~~ types of thinking

progressive required, Information and Assumption gathering and Improvement, Analysis for meanings, often resulting in more effective "Setting" of the problem, Creative solution search until the needs have been met, and judicial development until disadvantages of the better solutions have been overcome or suitably minimized. In fact, when a better answer to any problem is needed, this disciplined thinking system concentrates and guides all the mental resources assigned to the task, whether it be one or a dozen or more, and gets surprisingly better solutions. This is because the thinking system has all of the essential ingredients. 1) Tunes each mind to exactly what it is trying to accomplish at each moment. 2) All thinking is based on sound premises because of the penetrating search for and improvement of specific information and assumptions. 3) All effort is upon a precise problem, of the proper size which lends itself to solution, as developed in the depth studies of customer function values in the Analytical thinking step. 4) Depth, effective creativity in a creative environment is used until real accomplishment results. 5) Creative judgement picks alternative solutions to the problem which meet the need of the business, and, recycling specific parts through the problem solving system when necessary, minimize the defects, if any in the newer and better approaches.

Chap.6 Setting and Solving Management Problems. Perhaps it would be more in management language to say: "Establishing and Exploiting Management Opportunities". To pull a weed improves the garden, so does adding fertilizer (if it needs fertilizer) or adding new plants. While the work of the employee practitioner might average 75% improving some costs or service or product that exists, and 25% creating new benefits; the reverse is probably true of management -- 25% in minimizing problems in the present and 75% in creating new opportunities, new benefits, totally different actions. Chapter 6 shows the adaptation of the disciplined thinking system to directly ^{provide} ~~reach~~ management achievement of both types.

Chap.7 Setting and solving "Services" Problems. Services exist to accomplish some functions for someone. Any cost in any service which does not directly or indirectly contribute toward performing some service the customer wants and/or needs, is unnecessary cost. The service may be to move material, move information, store information, move people, collect taxes, pay pensions, house the ill, or repair the car. All lend themselves to direct definition in language of function. Chapter 7 illustrates how to adapt the thinking system of Value Analysis to services and illustrates with examples of use in the Hospital and in the municipal government, and in a community service.

Chap.8 Results Accelerators. The VA techniques are to ~~xxxxxxx~~ solve the hard problems, problems in which he feels "there is'nt any better answer to this, I can't keep all of this quality and reduce costs by 1/3". This chapter spells out some specific approaches, some of them very penetrating, which will, when used in conjunction with the disciplined thinking system, accomplish it.

Chap.9 Using The System. It is one thing to read about the steps of a new ~~xxxxx~~ mental process, it may be quite another, to be able to use these steps on ones own difficult problem. Three steps are required in learning a new skill. 1)Read the actions. 2)Observe the actions. 3) Get involved, take the actions. This chapter is step 2). The reader can relaxedly see how the techniques of chapter 8, the Results Accelerators, work throughout the job plan to crack the difficult ones and secure the results needed. It will help him to select the specific approaches to use to prevent his from being prematurely stopped before he has achieved the results needed.

Chap.10 Special Knowledge Required. For the M.D. to perform his work well, he must have a special field of knowledge. Likewise the gourmet chef, or the electrical engineer, or the person who wants to succeed better than the ordinary in keeping all quality in a product of service, and reduce costs significantly. This is vital. Without this special knowledge the Dr. could'nt operate, the chef couldnt cook, the engineer could'nt design a motor. The reader will learn from this chapter the kind of ~~xxxxxx~~ field of knowledge he requires, to excell in value work.

Chap. 11 Understanding the Decision Environment. This is a dreadful chapter. It will tell the reader what he does'nt believe, what he doesnt want to believe. Since he will be a decision maker, it will first infuriate him. Then he will start to interpret his experience in light of it. He will re-read it. It will grow on him. He will then see why certain important decisions which effected him, were made as they were in the past. His attitude toward, and his understanding of his business environment will thereafter be more real, more realistic, more practical, more effective.

Chap. 12 Effect on Other Work in the Business. Before a short-stop was added to the baseball team, he was'nt missed. Each player on the field did ~~xxx~~ what was considered his. When it was decided that another man was needed, to reduce losses in the area, and the short-stop was added, it meant some re-adjustment of all of the players in the field. They needed to know: 1) exactly what would he do? and 2) how would it effect them. This chapter will tell the reader about the interfaces of his new accomplishments with others.

Chap. 13. Effective Organization for Value Work. Each reader will be identified with some specific activity. He will want to accomplish meaningful improvement in his area. His question is: What is needed for my size and type of task? This chapter tells him.

Chap. 14. Essential Characteristics and Training for Value Analysts and Engineers. This chapter is for practitioners and managers. It tells the would-be practitioner what training is required to give himself a reasonable chance to excell in this work. It tells the manager who wants significant earnings improvement, and/or competitive market benefits, or, the manager who wants much more service for the same cost, what characteristics to look for in selecting personell for that important task, then what training he must expect to provide for them.

Chap. 15. Work Content For the Value Analyst, Engineer, and Consultant. Whenever a new system or product, which will ~~accomplish~~^{meet} certain needs more effectively than its predecessors, becomes available, certain actions are required. If a much better tractor became available, it would be vital to 1) tell decision making people about it, 2) Use it for them on their work to show them exactly how much better it works, 3) Train operators and perhaps establish operator training courses, 4) to advise users and potential users how it relates to their need for equipment and services, etc. This chapter outlines for the practitioner, these activities which it is important that he conduct, gives him additional instruction in each of them, and suggests good balance which has been found to be effective.

Chap. 16 Motivation, Measurement and Tests. This chapter tells how to cause a business or service to use it, how to cause the managers to support it, how to motivate good use of the techniques from practitioners, and how to cause good decisions which are based upon the better thinking. It provides measures, guides ~~and~~ tests and comparisons which aid the manager or practitioner to increase the excellence of the work being done.

Chap. 17 Advanced Techniques. Learning to use, and using the "Function Analysis System Technique" is like doubling the horsepower in the car. It requires learning, practice and the development of skill, then a produce or service of any complexity can be handled, and thinking of incredible clarity and value readily develops.

Chap. 18. Using the System to Reduce Construction Costs. Written for Architects and Engineers, Builders, Contractors and Owners shows, and illustrates by example, how large amounts of cost which bring no function continue to remain and even to increase in building cost. It pin-points specific items and areas which form a sound start for value work to produce large reductions in unworking costs in the construction field.

Chap. 19. Problems for Assignment. Here are some real examples, from competitive products, with enough exact information so that the learner can check his growth in skill in using the VA techniques to make large benefits in cost, with no quality change. Some learners will do better in some of them than was done in the actual work situation in industry, but the actions taken in each case are in the appendix for reference.

~~XXXXXXXXXX~~

APPENDIX. Here the learner will check his results on the problems of Chap. 19. Bibliography is included which will help him expand and deepen his knowledge of the VA approaches and techniques. Superior guidance in the making of "Make-or Buy" decisions which will contribute to earnings are included.

11. Both the "What to" and the "How to" of a specific system of disciplined thinking, which produces better answers to business and /or service problems. By "Tuning the minds", then progressively sticking to the type of thinking until it is thoroughly done, better answers are produced. Perhaps best of all, by the same people. Management does not usually have to get new personell. Their own people, with this system can cope with competition.

This book shows the reader how to apply the techniques to reduce non-contributing costs in hospitals. The techniques are applied, and examples provided.

For the first time, details of applying the system to eliminate some of the "wasted" cost, ie, costs which bring no values of any kind to the owner or user, are shown and illustrated. Construction will be a \$100 billion per year job in America in the 70's, and there is not one job which would not benefit by the use of this disciplined thinking system.

12. The need ~~XXXXXXXXXXXXXXXXXXXX~~ to compete profitably, in any endeavor, be it product or service, makes this book a must. Generally, when the customer had no choice, it was not necessary to have the better answers this system produces. But introduce competition, and it becomes essential, even essential when it is necessary to produce a maximum of results in a minimum of time in R & D.

13. There are few books in the field, although this vital need will attract more. This book is a complete, organized, teachable, learnable system. It takes the learner from the beginning to the present in essential technique, with ^{no} "Left Out" steps. It covers the philosophy, the system and the practice. Other books which I have seen, and there are not many, discuss or illuminate parts of the system, and, I have felt tend to create a need for this book, which teaches the whole system.

The English book by Gage, is like a friendly commentary on our first edition. It in effect says, "this is good in Brittian too", and illustrates it by Brittish examples. In its 186 pages it packs lots of compliments for our book.

The swedish book by Jan Ollner and others, emphasizes the systematic progression of the job plan in a very effective manner. Its 118 pages could be entitled "The Use of the Value Analysis Job Plan", and it contributes well in this one area. It is named "Vardeanalys"

The 1970 book "Vardeanalys" by the swedish authors Olsen and Perning carries a "Forward" from me. It is 240 pages, and I do not know what it says.

14. Illustrations for promotion. Since I do not have a copy of the Figs. I cannot use their new number designations, but I will describe each as best I can from previous location.

ILLUS.

①

It identifies costs which do not contribute function:
old 4-1 and 4-2 pages 111 - 113
new probably Nos. 9-1 and 9-2

Disciplined thinking exploits special opportunities to keep all function without all costs, which exist thruout all areas of human activity.

ILLUS.

②

Case study "No Waste" from old page 64

When each element of a product or service creating costs is viewed as a "Function", and the function or functions evaluated by the system, as taught in Chap. 3, some figures very different from the present costs usually are produced, and each, on its own very valid basis.

ILLUS.

③

Old page 176

In the "Construction," I suggest the Fig. showing the before and after, on the canopy which covers the doorway. It is of course in Chap. 18.

ILLUS.

4

no enclosure.

The Use of the Techniques

111

example comprising two items of an assembly (Figure 4-1). Item 1 is a stainless-steel button, and item 2 is a carbon-steel pin.

Basic Step 1: Identify the Function. This coincides with the "orientation phase" of the job plan.

The two items are parts of a heat-sensitive device which consists of a nichrome tube having a high coefficient of expansion and an inner, smaller, concentric quartz tube having a low coefficient of expansion. As the ambient temperature changes, the difference between the coefficients of expansion provides a motion which operates electrical control equipment. Item 1 is secured in one end of the nichrome tube, its function being to provide a self-centering receptacle in which the $\frac{1}{4}$ -inch diameter quartz tube may reliably rest. The function of item 2 is to transmit the motion from the opposite end of the quartz tube into the control device. Accordingly, it is necessary to provide one part which will be supported on one end of the tube, i.e., something in the nature of a flange, and another part which will extend about an inch beyond the other end of the tube into the control device, i.e., something in the nature of an elongated member, such as a portion of a nail. Also, a part is needed

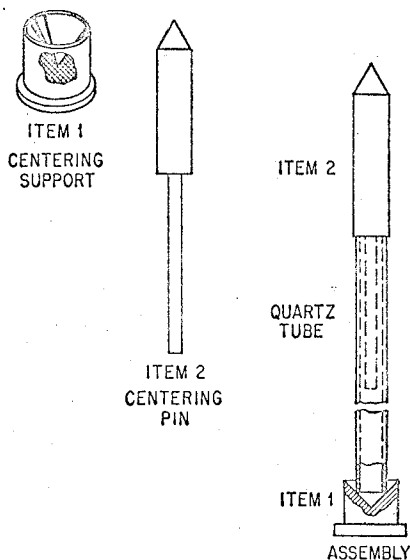


FIG. 4-1. Item 1, centering support; item 2, centering pin; item 3, assembly.

which will extend into the center of the quartz tube for a distance of perhaps an inch in order to keep the quartz tube and the metal part now being studied in the approximate center, axially, of the nichrome tube.

Basic Step 2: Evaluate the Function by Comparison. It will be observed that this is a tentative evaluation which will be revised as the various techniques are used in greater depth later in the study. It will also be observed that we have now progressed into the "information phase" of the value analysis job plan. Before making even a tentative evaluation of function, it is necessary to know the quantities involved (50,000 per year), since quantities required have a major controlling influence on the number of processes that can be employed.

For the purpose of centering and supporting the $\frac{1}{4}$ -inch diameter quartz rod, comparison may be made with a washer, perhaps $\frac{1}{32}$ inch

Illustration ① sheet 2 of 3

thick and $\frac{5}{8}$ inch in diameter. Instead of the usual hole in the washer, a conically depressed center will provide the self-centering and supporting feature. The washer is evaluated by comparison with a standard stainless-steel washer, which would have a cost of about $\frac{1}{4}$ cent. However, since this would not be made in quantities as large as ordinary washers and would, perhaps, need some special tooling, a comparison figure of 1 cent is set. Thus we now consider the value of the function of item 1 to be approximately 1 cent, which is, in effect, the same as saying that it is believed that, considering every suitable process, material, and idea, the function can be reliably accomplished for that amount.

Item 2, when compared with a nail of about the same size, would cost $\frac{1}{10}$ cent. Nails, however, are made in extremely large quantities, and a nail in its usual form would not be suitable. The head would have to be coined in the center, and a more refined point would probably be required. In that light, this function also is evaluated, by the adjusted comparison, at 1 cent.

Basic Step 3: Cause Value Alternatives to Be Developed. Suitable value analysis techniques that will cause value alternatives to be developed are now selected. In the present case, the techniques initially chosen are:

- 2. Get all available costs.
- 4. Blast, create, refine.
- 5. Use real creativity.
- 7. Use industry specialists to extend specialized knowledge.
- 9. Utilize vendors' available functional products.
- 11. Utilize specialty processes.
- 12. Utilize applicable standards.

While still in the "information phase" of the job plan, these facts are established:

Item 1 is made on a screw machine from stainless-steel bar; its cost is 6 cents. The applicable drawings, specifications, and planning cards are sought out.

Item 2 is made on a screw machine from $\frac{1}{4}$ -inch diameter steel rod. Its cost, likewise, is 6 cents. Manufacturing and use information concerning it are also accumulated.

By now proceeding into the "speculative phase" and applying technique 4, "blast, create, refine," and technique 5, "use real creativity," a wide range of possible solutions is opened up. "Brainstorms" are conducted and different approaches are explored. Likewise, a start is made with the application of techniques 7, 9, 11, and 12.

First, the functional requirements and some ideas for accomplishing the functions are set forth so that specialists can search their available functional products and study the use of their specialty processes in

Illustration ① sheet 2 of 3

The Use of the Techniques

113

relation to this need. Second, a search for applicable standard items is started.

In next moving into the "program-planning phase" of the job plan, certain programs are established. Two of them cover the following actions. Specialists who use the coining process and specialists who use the cold-upsetting process are encouraged to apply their particular knowledge and to adapt their processes for the functions of item 1 and item 2.

By the various steps of the "analytical phase," it is determined that one of the probable best selections for item 1 is the coining process and one of the probable best selections for item 2 is the cold-upsetting process.

In the "program execution phase," the suppliers selected are provided with every possible assistance to assure accomplishment. Since the assembly is small and is already in production, the suppliers are provided with actual assemblies as well as necessary drawings and, perhaps fully as important, with encouragement and with prompt answers to their questions.

In the "status summary and conclusion phase," suggestion sheets are made out from the results provided. These show that, with retainment of complete interchangeability of parts, the cost of item 1 can be reduced from 6 cents to 2 cents, and the cost of item 2 can be reduced from 6 cents to 1 cent.

The sheets also indicate in general how to proceed to accomplish these results. Folders of supporting data are provided to appropriate people in the decision and action area to enable them to identify and promptly remove unnecessary cost.

It will be observed that the process is an objective, action-oriented, searching study of:

What is to be accomplished.

What is the best way of accomplishing it, i.e., the lowest-cost way of reliably doing it.

What are the best answers from the best sources using the latest knowledge and technology.

What clear information is to be crystallized for the basis of decision and action.

As skill is acquired, less attention is necessary in selecting the right tools or techniques. For the sake of effectiveness, however, each of the basic steps, each of the provisions of the job plan, and each of the special techniques should be well learned and should be applied as a well-arranged part of the user's procedure.

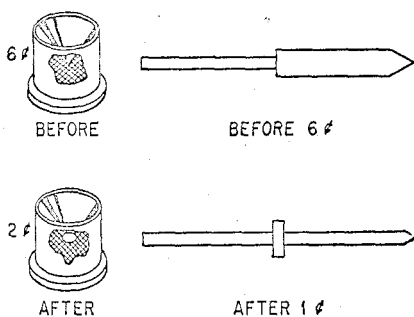


FIG. 4-2. Centering support and pin after modification.

Case Study

ILLUSTRATION (2)

NO WASTE

A shift lever bracket (Figure 3-8) on an appliance was used in quantity and made of $\frac{1}{8}$ -inch-thick steel 3 inches wide. A die the size and shape of the required part was used. It blanked each item as required from the material,

64

Techniques of Value Analysis and Engineering

leaving a slight amount of trim all around. The part cost 11 cents. Its function was evaluated at between 2 and 3 cents.

In the creative phase of study, dozens of possible approaches were listed; for example:

- Make of wire form
- Plastic
- Standard angle
- Flattened tubing
- Eliminate it
- Combine with the handle

One phase of the creative study developed suggested changes for the tooling used in making it. One suggestion was to cut off the piece instead of stamping it out. It was then discovered that the part had an unusual symmetry in that its edges were parallel and its top and its bottom could be identical. A new punch was made which would provide identical tops and bottoms to the part and which was itself the size of the required stamping. A slightly narrower steel

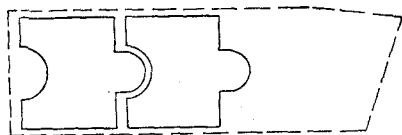


FIG. 3-8. Normal stamping operation with one piece formed at each stroke of machine and waste around edges.

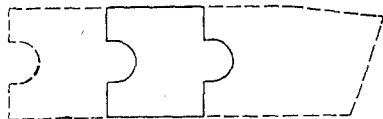


FIG. 3-9. Improved stamping operation with two pieces formed at each stroke of machine and no waste material.

material was ordered so that there would be no waste on the sides, and the stamping operation would change to a cutoff operation. Since the stamping die was then exactly the size of the part required and either the bottom or the top would cut the shape required, the material was moved the length of two parts at each stroke and the punch acted to shear off one part with its leading edge and another with its following edge. The result, as shown in Figure 3-9, was that instead of one part with each stroke and waste all around, two parts were secured with each stroke and no waste whatsoever was made. Cost became 2 cents each.

with a full understanding of the way costs are built up in the use of various processes, he made up a sheet for each of the parts and each of the important subassemblies, with estimates of the costs based on the processes he had seen being used. This gave him the information he needed to provide positive suggestions to the vendor on steps that might be taken to lower the costs even more. Further he was now in a position to advise the vendor on approximately what costs he felt appropriate for many of the individual parts and individual subassemblies, and these costs the vendor could then use for comparison with his own costs. The tabulation below includes two items: first, the cost which the value engineer estimated after reviewing the supplier's manufacturing processes; second, the cost which he considered appropriate and which was based on positive suggestions made to the vendor. The latter cost is designated "value."

Item	Estimated present cost	Value
Spur gear.....	\$ 15.00	\$ 5.85
Gear.....	20.00	7.25
Sleeve.....	105.00	90.00
Side plate.....	2.00	0.00
Block.....	4.00	0.00
Shield.....	5.80	1.80
Gasket.....	1.00	0.05
Gasket.....	4.00	0.15
Adjusting sleeve.....	4.00	1.50
Spring.....	1.30	0.31
Pin.....	3.00	0.75
Special screw.....	1.00	0.10
Shoulder bolt.....	3.10	0.10
Spring retainer.....	3.50	0.05
Cartridge pump.....	137.00	89.00

It should be noted that, in making these suggestions, the value consultant brought into play the various value analysis techniques such as utilizing vendors' functional products, buying standard products and modifying them slightly, using specialized vendors, and reevaluating tolerances which make no contribution to performance.

After study and implementation of the alternatives, the vendor was able to make a new quotation of \$1,800, and the redesigned equipment retained its capability to accomplish the total function with reliability. His costs had been decreased sufficiently so that his company was still provided with its proper earnings.

The use of sound value practices together with very much better value knowledge benefits both the user and the seller.

It should be observed at this point that full recognition of certain basic premises is necessary for the effective interplay of the relationships in question. These premises are:

TRAINING AND EDUCATIONAL MARKETS

15. This book was created, developed and arranged to meet four specific needs. It will save the reader time, and money if he uses it, and it will, at the same time provide him better knowledge and skill in the VA field.

1) Training programs and seminars in business and industry. 2) Classroom instruction in colleges, both for undergraduates and for continuing education. 3) Management reading and guidance, and 4) Professional men, both individually and through their professional societies.

(I hope McGraw-Hill people will go ahead with all of the good contacts I know they have, however I will progressively collect information in this area and forward it to you)

16. Society of American ~~XXXXXXXXXX~~ Value Engineers ~~XXXXX~~
2550 Hargrove Drive, L-205, Smyrna Ga. 30080

(New officers for all chapters throughout the USA are being elected between now and May 31. I will get and send to you the officers names when they become available).

Electrical Engineering Societies

Mecanical " "

Industrial " "

Quality Control "

Construction, and Architectural Societies

Management Societies

Groups for improvement of operation of social groups, such Govt departments, manicipal and State Gov'ts.

Groups for improvement of Hospital Services, and especially for expanding services at lower costs.

The management of any company which is in a competitive business, and must do as well as competition, or a little better, is a good prospect for this book, which, if properly learned and used by enough of their employees would accomplish that objective.

17. For undergraduate, and graduate degree teaching in colleges. THIS IS A NEW SUBJECT TO MOST OF THEM. Some are starting. Traditionally it has been supposed that if the engineer is taught to design, he can do it suitably. With so much science to teach, there was no time to teach a real system for creating designs of products or services which would excell in lower costs. Now however it is being recognized that the student must learn a good system for handling "economic" factors in his decision making, just as he is learning systems for handling "performance" factors. Competition is increasing in almost all areas, and only those who know how to make good products and services competitively will survive. It is going into the college.

17 continued. Training in VA techniques is going

into the colleges in their Continuing Education courses.

This is now happening. Men are now living their lives.

They are finding that they can learn to do better in order

to compete. They are learning that VA techniques make them

more valuable to their employers, help their employers to

win in competition, that they can contribute much more than

hitherto to that success, that they will find job security,

advancement and satisfaction when they are skillful in the

use of the VA techniques. Its a large and growing oppor-

tunity for colleges to extend their area of usefulness.

18. This book is specifically prepared for the Seminar

conference and/or workshop. Any which do not use it will

require 25% more hard teaching effort, and result in not

more than 2/3 of the training results. It is arranged in

a step by step manner, so that the learner will in progression

get the basic system understanding in chapter 1. He will then

learn, master and use the first basic technique, taught in

chapter 2, then the next in chapter 3, the next in chapter 4,

then 5, 6 7 8 9 10 then 11. He will use these techniques on

some of the problems located in chapter 19. He will ~~xxxx~~

measure his work by one solution to each problem, which

he will find in the appendix. Then he will in chapters

12 through 16 learn how VA relates to other work and to

other people, how to organize, plan, staff, measure develop

the VA activity he needs, or is a part of. He will

find questions for study, and exact examples of the use

of the system, by the dozen.

Mr Miles, ~~III~~, is an educator, engineer and manager. With degrees in Education from Nebraska Wesleyan Univ. and Electrical Engineering from The University of Nebr., his career includes Engineering, Procurement, and Management at General Electric Co throughout a thirty year period, followed by five years as advisor and consultant to industries in the United States and Europe, who used the system of Value Analysis Techniques to assist in the task of maintaining quality and ~~make~~ sales volume in highly competitive markets at proper profits.

His lectures and seminars in the universities, and for professional societies in the United States, Mexico and Canada have enhanced the capabilities of thousands of men and started many companies ~~xxxxxxxxxx~~ on the road toward better profitability.

He is the founder and developer of the System of Value Analysis and its specific techniques. For his work in creating the system, General Electric Co awarded to him its highest award for Extra Achievement, and for the benefits it brought to the United States Navy, the Secretary of the Navy awarded ~~awarded~~ to him the Navy Distinguished Service Award. Readers Digest reported to its readers on the Value Analysis System under the title "Best Thing Since Mass Production".

Mr Miles is now enjoying his life on Maryland's Eastern Shore with his charming wife Eleanor, and his Cruiser "Duke" in semi-retirement, while ~~xxxxxxxxxx~~ providing guidance and leadership to some professional and business organization s.

From the desk of -
LARRY MILES

Biographical data used for a
PURCHASING association group.
Enclosed for supplemental data
if desired.

Our large volume markets will
not be restricted to purchasing,
therefore I would tend to avoid
over-playing my purchasing ex-
periences, excepting in special-
ized market approaches.

Larry Miles

Biographical Data

-Lawrence D. Miles

Mr Miles received degrees from Nebraska Wesleyan University in Education, and from University of Nebraska in Electrical Engineering. Joining the General Electric Co. as a design engineer, he became motivated by the economic factors in design, and after a few years, transferred to Purchasing work as a purchasing engineer, later becoming manager of purchasing for one of General Electric's divisions.

In 1947 he initiated and managed research in GE which developed a new set of techniques and approaches for more efficiently identifying more unnecessary cost sooner. He named the system Value Analysis. As engineers later used the system in engineering work they called it Value Engineering.

Mr Miles managed GE's Value Analysis and Value Engineering programs for nearly two decades. He is now the recognized creator of this basic technology, and an international authority on the subject.

He is the author of several dozen articles on various phases of Value Analysis and its use, and has written a text book, Techniques of Value Analysis and Engineering (McGraw Hill) which has been translated into six languages.

General Electric Co awarded him its highest honor for extra achievement. Secretary of the Navy Gates awarded him the Distinguished Service Award for benefits of the VA system to the United States.

He is an honorary member of the Purchasing Management Associations of Los Angeles, Eastern New York, and Washington D.C. He is a fellow of the Society of American Value Engineers.

He has taken retirement from General Electric, moved to a beautiful waterfront home on Maryland's "Eastern Shore" where his cruiser "The Duke" has its home port. He says that he now enjoys a fine mix, of Eastern Shore Living, and consulting in his chosen field.

PUBLICITY

20. Yes, there is strong relationship between this book and the current events of today. Making the link that would touch the publics "Hot Buttons" would require more Publicity skill than I have. Here are some.

1) We are threatened with major disaster now because of paralyzing inflation which destroys pensions, investments and values Americans have worked for all of their lives. Manufacturers are faced with the dilemma of losing profits because of rising costs, or raising selling prices and losing more markets. This book is a specific system for lowering those costs, saving the markets, the earnings, and staying more inflation. With the system, the people in place can do it themselves.

2) Construction costs are skyrocketing. This retards orderly growth in new homes, home ownership, industrial expansion needed, ^{and} new socially oriented construction such as hospitals, public buildings, roads and transportation systems. The system in this book, when it becomes effectively used in these areas, can stop the upward swing for 10 years. It is time to do it now.

3) In costs of essential defense, the system taught in this book has already eliminated hundreds of millions of dollars of un-necessary costs. It is fully documented and proven, still it is not now more than 1/5 used. Its benefits in more adequate defense for the dollars spent, can be increased five times by more learning and more use by personnel of the military and suppliers of the military. It is needed. We might truly say, "It is Required".

4) Essentially all socially oriented groups, such as government groups, hospitals, and local governments are being called upon for more services. The system in this book will allow any and all of them to provide more services without substantial increase in budgets. In most cases 25% to 50% more services can be provided without more funds, if the system is learned and used.

5) There is a restlessness among professional people today. They know that they could contribute more --- to their own advancement, their job satisfaction, their employers, and their society. Supplementing their knowledge and skills with the problem resolving and solving system will allow all of them to increase their contribution, many to double it. Some professional people are between jobs today. Right now they could learn the system in this book, and as a result find new opportunity sooner, and make much larger contribution, to the new job.

20. continued

It seems to me that good publicity could have intrinsic news value, but here again I am out of my line. Here again "Necessity Mothered Invention" . Here is a book, born of todays need to:

Stem rising costs and prices
Allow small business to "Turn Around", and make profits instead of die.

Stop the trend toward lowering quality in a frantic effort to stop the loss of markets and/or profits, and end widespread dangers of bankruptcy.

While accomplishing all of these good objectives, make it profitable and possible to much more often compete with off-shore manufacturers. For example the attached Zerox indicates that Japanese Mfgs. are several years ahead of US in the learning and use of the Value Analysis System .

Last, and by no means least, here's a book which really fights inflation effectively, and does so by helping each person to do his ^{mental} job better.

21. ~~continued~~

Your people have better access to the precise magazines than I now do, here on the Eastern Shore, so I will make a list of catagories. The leaders should receive it.

- 1) Management magazines
- 2) Engineering "
- 3) Design "
- 4) New Product "
- 5) Manufacturing "
- 6) Purchasing and Materials Mgt."
- 7) Some Sales oriented magazines
- 8) Magazines of the professional societies related to the above catagories.

See
Supplement

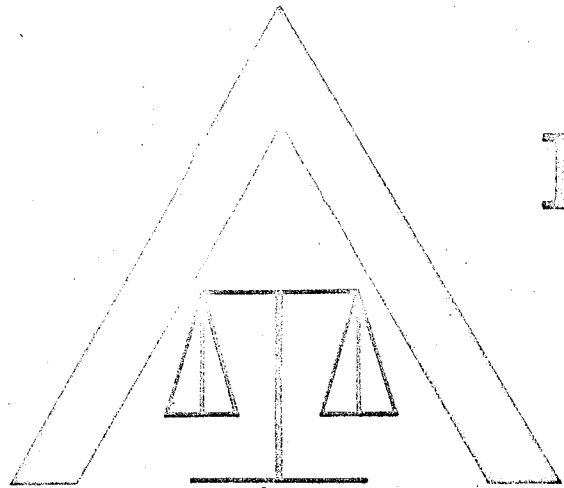
SUPPLEMENT TO ANSWER TO QUESTION #20

NATIONAL CAPITAL CHAPTER

NEWSLETTER

President: Rudy Kempter

Editor: Jim Shaw



SOCIETY OF AMERICAN VALUE ENGINEERS

27 March 1971

If what you see is Japanese, you're right. Twenty Japanese delegates came into town on short notice on Tuesday, March 23rd, and met with six members of our Chapter at the Washington Hilton Hotel. The delegation was sponsored by the Institute of Business Administration and Management of Tokyo, Japan. Each member of the delegation had been value trained. The delegation was billed as the "Corporate Cost Strategy" Workshop Group. We learned that most Japanese companies have a very large percentage of full time value engineers employed; roughly on the average of 200 VE's for 20,000 workers. Last year the Japanese trained about 1,000 employees in workshop sessions. They are very methodical and efficient about training. They concentrate on training one industry per year like electronics, automotive, aircraft, confections & foods, etc.

日産自動車株式会社
外製品管理部 技術調査課
部長 高梨三郎
東京部中央区銀座六丁目十七番一
電話東京(五四三)五五二二(代表)
テレックス TOK ニ五二二〇一(代送)

Most Americans feel that cheap labor is the reason their products cost less. That is true in Japan. However, our visitors told us that the cost of transporting their goods to the USA in US shipping more than off-sets the labor differential. That is why they're so strong for VE. And, VE is producing results for them.

One other point we noticed. The Japanese VE effort is not inhibited by pride of authorship. When they come to this country, they come to observe, listen, learn and steal any good idea they can lay their hands upon. A lesson for all of us.

Confidential Market Survey - Export Supplement

1. Competition is becoming very keen among the countries of Western Europe. Manufacturers must either compete or die. This system is as badly needed there as it is in USA.

A. This approach has about the same degree of acceptance in Europe as in USA. It does what they want to do better. It is not exotic to them. They need it, and when they learn about it, many of them want it.

B. This is supplementary to the approaches used in Europe just as it is in USA. I do include in the chapter on advanced techniques a sub-technique developed by a professional man in England.

C. Yes. Extensively and successfully for training seminars. I myself have been involved with them in Sweden and in England. I know that some work has been done in Holland, Belgium, Germany and France, and probably Italy.

D. My language and standards are the same as usage abroad.

E. The previous edition is translated into most of the 10 languages. Sales effort should point out the great advances, both in the system and the book which is now arranged for teaching.

F. There is nothing in the book which is negative to any other country.

G. The Japanese are so active in learning this system which is so vital to them. They probably will, if it is well shown to them, want to again produce it in Japanese.

2. I can list some books. I do not know whether, in reality they compete with ours, or whether they create interest which will increase the sale of ours.

In England

Value Analysis by Gage 1967 McGraw-Hill

In Sweden

FunktionsKostAnalys by Jan Ollner and others 1967

Värdeanalys by Erik Olsson and Ulf Perning 1970

There are probably some others in other countries, but they have not come to my attention.

3. A. I have had no education abroad.

B. I have conducted training seminars in Sweden, England, France, Holland and Switzerland. -- Also Canada and Mexico

3/ continued

C. No other professional experience abroad.

4. I have no knowledge in the area of foreign schools and universities.

5. see answer to 6-B

6. A. There is a Value Analysis society among the scandanaivian countries. I have spoken at their meetin g in Oslo. I do not recall the name. There are possibly chapters in England and other countries.

An excellent contact for this type of information is one of your authors, who has probably already filled out this survey form. He was given the task by The Soc. of Am. Value Engrs. of maintaining and establishing liason with foreign areas. I suggest you get the information from him. He is Arthur Mudge. Ty Hicks knows him.

B. In England

Value Engineering Ltd. 60 Westbourne Grove
Howard Leslie London, W 2, England
Arthur Garratt

Frank Horvath, value engineer, 318 Moston Lane East
~~XXXXXXXXXXXX~~ New Moston, Manchester
England 10

Bruce Whitwell, Value Engr etc. 20 Pelham Ct.
Hemel Hempstead
Herts, England

Fred Sherwin, Value Engr add. not known

In Norway

Chris Rand in Oslo.

In Sweden

Ulf Perning Stockholm

Erik Olsson "

Jan Ollner "

KarlEric Nordmark, ASEA Co. Vasteras, Sweden
(In charge of VA activity for the company)

7. I am not familiar with foreign journals.

8. Some seminars for an organization in Paris but it was about 8 years ago and I do not still have any names. It was organized by the Industrial Education Institute of Boston.

8 No.