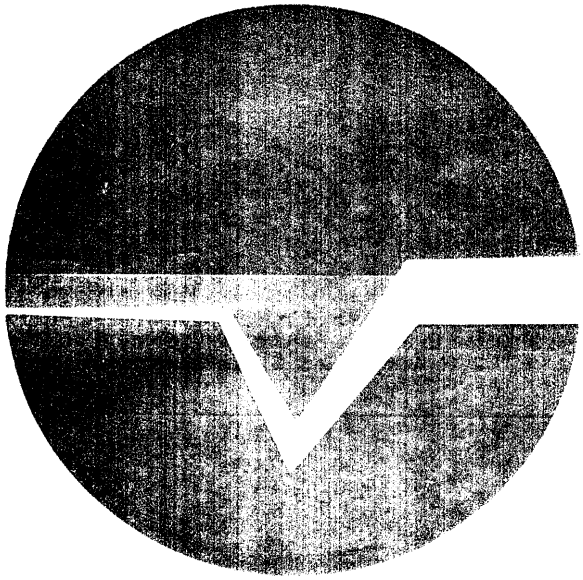
INVAVE



JULY 1979

Journal of the Indian Value Engineering Society

First Invest-sponsored VE Workshop held in New Delhi from April 9 to 13, 1979 at Hotel Maurya Sheraton L. R.—The Faculty, A. K. Sethi, R. H. Rossman, R. H. Kempter & S. S. Venkataramanan

Participants and Faculty at the VE Workshop—from SAIL, HEC, BHEL, Punjab Tractors, Escorts, Bharat Steel Tubes, Ranbaxy, Leader Engineering Works, The Indian Army & The Indian Navy.

INVAVE

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In this Issue

As it is one objective of the INVAVE Journal to be a forum for the free expression and interchange of ideas, the opinions expressed herein are those of the individual authors and not, by the fact of publication, those of the Publishers.

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NEW DELHI-110001

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EDITORIAL

INVEST successfully completed their first major Value Engineering Workshop covering all of 40 hours and more during a 5-day stretch April 9-13, 1979. This constituted the third in the series of member-services—the first being the now regular publication of 'INVAVE' and second was the holding of two value Engineering Exhibitions in New Delhi in March this year.

The workshop which was held at Welcomhotel Maurya in New Delhi, was a fine success from every point of view—

*Professional

*Technical

*Results and, equally important,

*Financial.

In large measure, the success was due to the open-minded approach, hard work and great interest in value engineering evinced by the senior executives—some of whom were really from the top echelon—coming from the pharmaceutical, automotive, steel, heavy engineering and light engineering industries as well as from the Defence Services. Participants particularly appreciated the fact that specific projects from their own companies constituted the project work. The background materials, especially the Project Work Book and Top Management Recommendation Book, were stated to be unique compared to value engineering programmes conducted by other organisations in the country. We, of course, cannot feel complacement with this for the simple reason that our Society, being specifically devoted to value engineering, cannot but do better in this field in comparison with other organisations, who are treating it as just *one* of their many activities. We however recognise that the latter are nevertheless doing a fine job and it will be one of the objectives of INVEST to help these other organisations acquire greater competence in offering VE courses, seminars and above all, *result-oriented* workshops on live projects.

INVEST hope to conduct more such programmes, together with an exhibition such as was put up at New Delhi in March, at other centres also. INVAVE readers will be happy to know that proposals in this connectlon have been received from Bombay, Bangalore and Calcutta. We call upon the members and readers alike to help in the process further. We would draw their attention to the requirements to be fulfilled for them to become Certified Value Specialists (CVS). With more and more members acquiring this high professional qualification and recognition—at the moment from SAVE, USA—INVEST can enlarge the scope of its activities in different centres in the country at less cost.

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VA-VE Concepts and their Practical Application

Commodore R. Chandra

B. Sc., DFH (Hons) (London), M-INVEST, FIE

Commodore Chandra joined the then Royal Indian Navy in 1948 and during his training in the United Kingdom was awarded Gold Medal for standing first in electrical engineering examinations conducted by Faraday House, London Presently Director of Value Engineering, Naval Headquarters, the author has served in a number of key assignments both afloat and ashore such as Training Commander, Naval Electrical College, Commander (Electrical) of a cruiser, Chief Inspector, Warship Equipment and Director of Logistics Support. An eager VE enthusiast, Commode Chandra is a founder member of INVEST and a member of the INVAVE Editorial Board.

Introduction

The aim of Value Analysis—Value Engineering is basically to ensure better value for money. It could be in the form of cost prevention, cost reduction, improved reliability, better performance or even reduction in the weight of the selected product—an important factor as far as ships are concerned. The crux of this discipline as defined by Larry Miles is 'Define function—Evaluate function with reference to worth and cost'. By an organised and systematic application of this discipline, one finds that a number of 'frills' can be taken out from the specifications and that the remaining essential features can still be performed at a reduced cost without in any way impairing the functional utility, reliability, durability or maintainability. VE utilises the natural questioning attitude in a human being i.e. to investigate the whys, hows and whats of inputs in any process and by analysis, either eliminates the 'gold plating' or finds technically acceptable but less expensive substitutes. This exercise is normally carried out by a Study Group consisting of representatives from diverse areas/ disciplines such as design, production, materials management, inspection, finance and marketing (user in the case of Service equipment).

VE in the Services

The thrust of VA-VE in the Services is directed towards functional requirements and operational availability as distinct from the 'esteem' value normally predominant in 'consumer' products. This technique is progressively being applied in varied fields of activity

e.g. critical appraisal of 'User' requirements relating to induction of equipment and systems, review of equipment which has been in service for a long time without any design changes, material management etc. In the Navy alone, where such studies commenced hardly twenty months ago, savings to the tune of rupees two crores have been achieved besides the development of an entirely new VE product for the first time in the Services.

Factors governing success of VE studies

Prior to giving a brief account of one of the intitial VE naval projects, it would be desirable to highlight some of the cardinal 'features' which predominantly affect the extent of the success of any VE study. These are enumerated below :—

(a) VE is invariably 'function' oriented as distinct from other aids to management such as cost analysis, work study and operational research. Great stress should, therefore, be given on 'group approach' whilst evaluating functions vis-a-vis worth and cost and finding technically feasible alternatives by bringing out the latent qualities of imagination and creativity of the members of the Study Group.

(b) The aim throughout the conduct of VE should be to make best use of the talents of the members belonging to different disciplines *i.e.* the designer, manufacturer or the user. There should be no protocol amongst the members of the Study Group or those coopted for the project work--'ideas' emanating at all levels should be encouraged, gathered and scientifically sifted. Nowhere during the conduct of the exercise are statements made or recorded such as 'why did you not think of it earlier or it is obvious that due consideration was not given on this vital aspect earlier'. In short, human dynamics play a very important role in the conduct of any VE workshop.

(c) One should never be hesitant in seeking advice of specialists may it be in the field of technology or in processes. A humble but a dedicated Study Group leader can pick up numerous ideas during brainstorming sessions—some of these are bound to 'click' and ultimately lead to the development of a product which gives better value for money.

(d) Collection of basic data and its preliminary analysis with a view to determining the VE potential of a project is of paramount importance—selecting a project with a poor VE potential may not only be an infructuous exercise but could also reduce the credibility of this new technique in the eyes of the management.

(e) Instructions for the conduct of VE workshop must be issued by a senior officer-this has its inherent advantages. The top management, whose explicit support is essential for any VE study, should be periodically briefed on the progress made by the Study Group.

(f) There should be a realistic time frame for every VE study and genuine efforts made to stick to the targets set after careful deliberations by the Study Group.

(g) On successful completion of every VE study, the Study Group leader must ensure that credit is shared by all involved in the relevant studies and particularly by those who, inspite of their ego and their earlier involvement in the project, agreed to the VECPs—a salutation to this excellent aid to management.

(h) VA-VE studies may not always produce spectacular results, but they certainly yield two benefits. Firstly, every person associated with a particular project gets a good exposure to this excellent tool of cost effectivencess. Secondly, any savings, howsoever small they may be, add up and the cumulative amount can well be diverted to other pressing projects.

Naval Project—Value Engineering Studies on AUTOMATIC EMERGENCY LANTERNS

Automatic Emergency Lanterns (AELS) are installed on board ships to provide

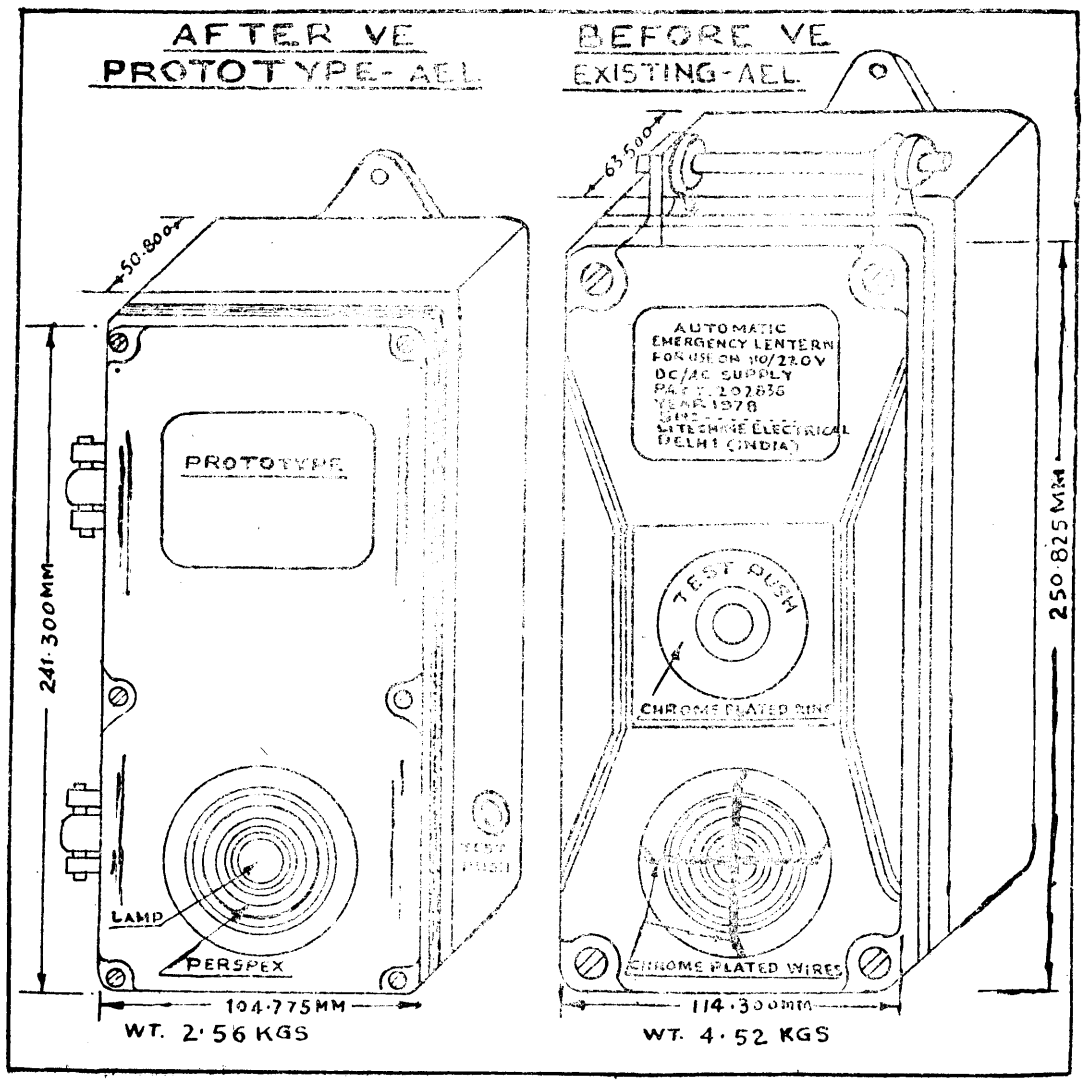

Fig. 1

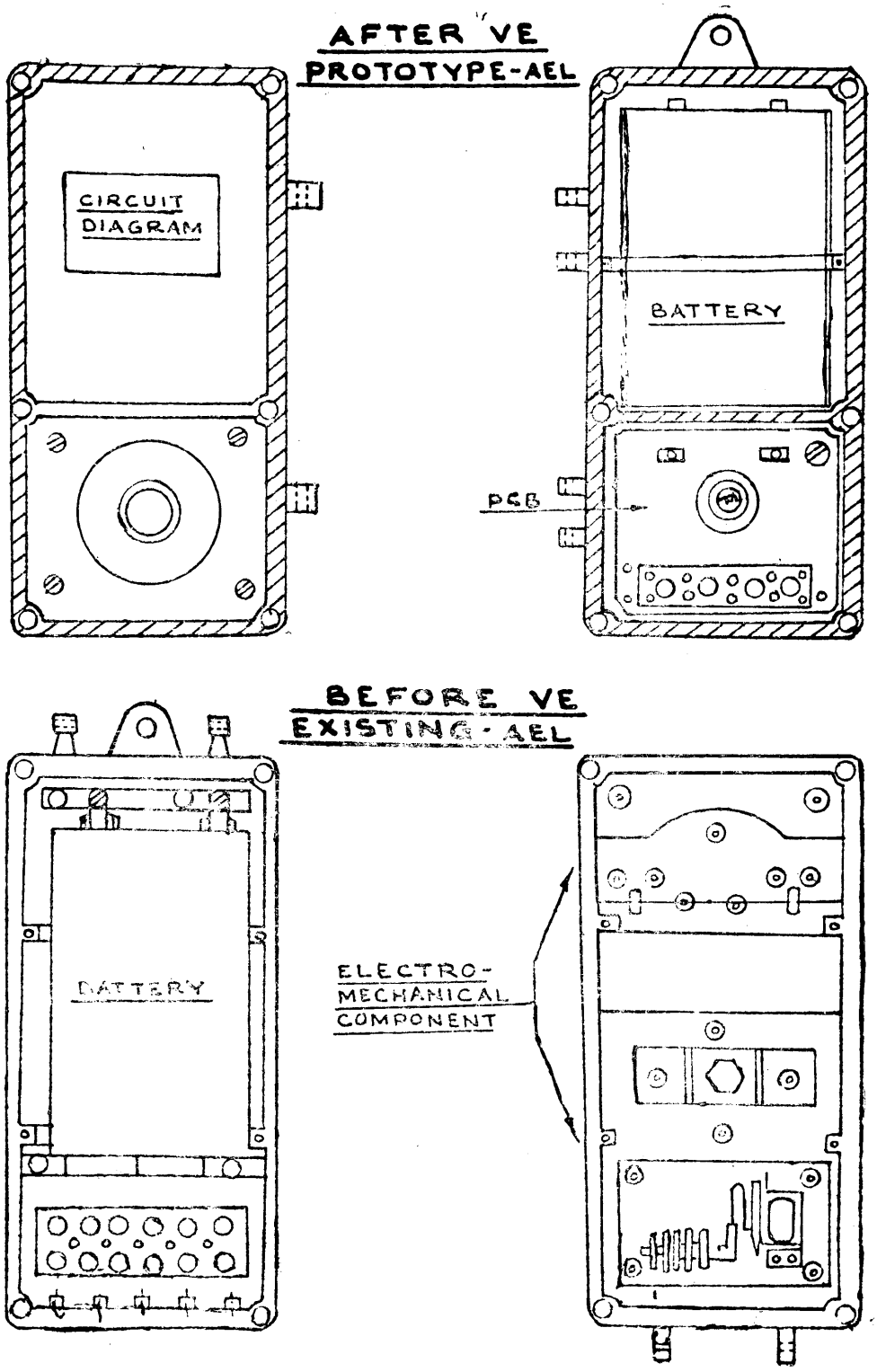
AFTER VE
PROTOTYPE-AEL
CIRCUIT
DIAGRAM
BATTERY
PCB
BEFORE VE
EXISTING-AEL
BATTERY
ELECTRO-
MECHANICAL
COMPONENT

Fig. 2

instantaneous subdued illumination at strategic places in case of complete power breakdown. In short the *Function* of AEL is to 'Provide Alternative Illumination'.

Sketches of the existing and the value engineered AELS are given at figures 1 and 2.

Evaluation of VE Potential

A gist of various factors which determined the VE potential of AELs is enumerated below :—

(a) Cost of a single unit costing above Rs. 1000 appeared expensive for the 'functions' performed.

(b) Large number of AELS are fitted on board ships 70 to 80 for a warship of medium size.

(c) Large annual replacements.

(d) Substantial requirements for ships and crafts under construction in various shipyards.

(e) Out dated design due to technological changes.

(f) Feedback reports indicating maintenance problems.

Formation of Study Group

3. A Study Group was constituted with representatives of the User and Inspection authorities, a meterologist and the manufacturer of the product. Advice/ideas were also sought from specialists and Command and Ship's officers by coopting them in the Study Group.

Conduct of VE Studies

4. The Study Group adopted the DARSIRI technique of systematic VE approach i.e. Data collection phase, Analysis of functions, brain-storming sessions etc. High cost, low value items were selected as VE candidates. Over 60 ideas emanated during the brain-storming session. A gist of the 'record of ideas' is given below :—

1. Fitting too heavy—alter/modify
2. Improve circuit design
3. Incorporate trickle charging
4. Change material
5. Modify/eliminate components/mounting arrangements
6. Change battery
7. Eliminate battery cover

8. Change battery location

9. Improve cabling

10. Replace push button by switch

11. Too much electroplating

12. Reduce grommets/cable entry points etc. etc.,

5. After going through the normal drill of VE studies, the final prototype which emerged, differed significantly from the original AEL by way of design & characteristics which were brought about during the VE exercise. The use of a much smaller and superior standard NiCd battery, elimination of unwanted features such as elimination of four chromium plated wires costing Rs. 8/- to protect perspex shade costing Rs. 2/-, use of solid state circuitary etc. has now resulted in a value engineered product which is lighter, cheaper and gives better value for money. The salient features of the new AEL are given below :—

1. Provision for battery charging in SITU

2. Solid state circuitry

3. Reduced No. of components

4. Use of standard 7AH 2.4V battery with superior performance

5. Separate battery compartment

6. Improved reliability and maintainability

7. Smaller and lighter (4.52 Kgs—2.56 Kgs)

8. Cheaper (Rs. 1048—Rs. 730)

User Trials

The preproduction model of AEL was subjected to extensive user trials on board a warship. Encouraging reports highlighting the superior performance and better functional utility of the new model have been received.

Efficacy of Value Engineering

The above is just one of the examples where 'function' oriented approach by a group of officers belonging to different disciplines has resulted in a value improved product which is 25% cheaper, 50% lighter in weight, has in creased reliability and maintainability and incorporates the added facility for charging batteries 'in situ'.

TISCO PROFITS FROM VE

The pioneering genius of Sir Jamshedji Tata did not end with him as every high school student knows. In many fields of industrial endeavour, the Tata House has been in the forefront in pioneering new concepts, new techniques and new ways to benefit the nation during the last 75 years. VE has been no exception. As early as the mid 60s, when very little about Value Engineering was known in India, TISCO had sent a couple of their engineers to the U.S.A. for detailed study of this technology. In a paper presented at a 2 day seminar held by the prestigious Management Training Institute of the Steel Authority of India Limited at Ranchi in November 1977—which incidentally was inaugurated by Shri H.P. Bodhanwalla, Director of TISCO—Tatas' Works Engineer (Standardiation), Mr. S.S. Iyer, outlined the benefits drived from TISCO by application of VE as under :—

"1. Functional Analysis of the Coke oven area.

This is how we applied it at the Coke Ovens for raising the through-put from the Coke Oven batteries. Under the cost control programme, various means were tried, and with varying degrees of successes, to raise production—through improving yields, through reducing delays, etc. Yet, there remained a marked gap between the best attained in the past and the current actuals. Continuing this drive, therefore, the judicious thinking was towards finding any means for cramming more coal into the ovens. We tried to increase the capacity of the oven-top charging hoppers ; but there was no room. We attempted to increase the bulk density of the charge by raising the fineness of crushing ; but there was a mechanical limit to comminution with the hammer mills we have. We experimented with an oil spray, to reduce the voids between coal fires and consolidate better ; but there was an economical limit, as oil was very expensive. So, having reached almost a dead-end on all these, it appeared as though nothing further could be done. That was the time the first training course in Value Engineering was organised in the steel town and the principles of Value Engineering were being widely disseminated. So it was that, using the functional analysis technique, the oven, the charging equipment, the charging procedure, etc. were studied—what is it, what does it do, define the function in two words, a verb and a noun : the former, broad enough to cover the entire gamut of action the item performs, and the latter, to enable quantification. In this analysis, out of the several items studied, the innocuous leveller it was which gave us the solution, when its function got defined as "Spread Coal." A common-sense question was then asked, "Then, why should it skim off some coal through the leveller door ?" The chain reaction was to ask, why cannot the 260 mm wide leveller bar be reduced in width, so that the bar would not only skim off any coal, but also permit an increase in the height of the top of the coal charge to that

extent ? A few modifications were tried, until the optimum between the reduction in width and the rigidity of the equipment was struck at 170 mm. The reduction from 260 to 170 mm enabled an increase in coal charge by 2 3% per oven."

We have assessed the financial benefits of the above, taking TISCO's annual production of coke at only one million tons, at not less than Rs. 7.5 crores (assuming a low rate of Rs. 300/- only per ton of Metallurgical coke).

2. The next successful exercise in TISCO was in increasing the yield of finished blooms from Steel ingots coming from the Steel Melting Shop. Invariably, the rolling of blooms in the Blooming Mill, causes fish tails at the back end of the bloom. This tail usually, has several splits, which have to be "cropped" (i.e. cut) and discarded before the bloom goes for further rolling or forging. Despite every care taken by the roll and shear operators, there is considerable loss of yield due to the fish tails.

A VE study examined this aspect and assigned the function of the unremunerative cost in the form of the cropped metal, as "prevent bloom splitting". (To enable wider creativity, the function could be termed as "avoid cracks"—Ed.) VE's typical problem-solving technique on this needed function is to ask "HOW ELSE to avoid cracks ?" TISCO's creativity session came up with some questions :

1. Why not carry out some research regarding various configurations for the bottom surface of the ingot BEFORE it is charged into the Blooming Mill ?
2. Why not we deliberately build up lumps at the ingot bottom ?
3. Will it perhaps avoid the split and the crack ?

Developing this idea further led to a re-design of the bottom plate of the ingot mould by which a small mound like formation was obtained on every ingot made with this bottom plate. This proved fully successful. The new type of ingot mould viz. TP-2 type, then replaced the conventional flat bottom plate of the TC type mould leading to an increased yield of 0.5%. Trivial, isn't it ? But calculate its effect on only a 0.75 million-ton production of ingot steel (which is on the low side for TISCO) ; this trivial percentage will work-out to 4000 tons per year ! Taking the cost per ingot ton at only Rs. 1000/-, the annual benefit on this small VE study work out to Rs. 40/- lacs ! Anyone to dispute that this sum represents good Value ;

Fringe benefits following this change are obvious ;

* Less labour on shearing/cropping the split ends.
* Less handling as there are practically no cut ends.
* Less generation of scrap and its recycling to the Steel Melting Shop.

Why Creativity ?

S. S. Venkataramnan, CVS.

Till recently Value Engineer with the Steel Authority of India Ltd. New Delhi, Venkataramanan obtained his B.E. (Hons.) in Mechanical Engineering from Madras University in 1954 and became a Certified Value Specialist in 1977. He worked for the Indian Railways for over 21 years and was one of the Chief architects of the Railways' modernized Inventory Control System. He has lectured extensively and written many articles on VE. Currently, he is INVEST Secretary & practises on his own as a Consultant in VE.

Next to Function Analysis, one of the corner stones of Value Engineering is Creativity. Apart from the benefits of unfettered exercise in methodically listing all possible ways of performing a function—as dealt with at length in Larry Miles' classic book "TECHNIQUES OF VALUE ANALYSIS AND ENGINEERING" — people often wonder why creativity should be attempted and how commensurate will be the results. Some time back, we came across an excellent answer to this point in the experience of Matsushita Electric Company of Japan. This Company is well known as the makers of the famous brand of electronic products marketed under the trade name of NATIONAL PANASONIC. They had organised a drive to use the Creativity as well as technical expertise of their entire work force and came out with fantastic results.

We will first take the data they have reported in respect of their small T.V. and Instrument Manufacturing Company located at IBARAKI, OSAKA, Japan—

1. Total workers employed— 1500
2. Average number of suggestions received from them *per head— per year* ! 50

If we now take the entire Matsushita work force, covering all their plants in Japan, the results are even more impressive.

1. Total work force 63,000
2. Total number of suggestions received from them in the year 1976 663,475
3. Average per head per year 10

As far as we know, no Organisation or Industrial unit in India—be it a small scale unit of less than 10 personnel or a huge Steel Plant employing 35,000 men has ever averaged even *one* suggestion per man per year. Here, in Matsushita, the *average* for nearly 7 lakh workers is TEN and more. This means that if we allow for at least 10-20% of the workers making no suggestions at all or very few, there must be several thousands of employees motivating themselves to offer 50-100 or *more* ideas every year—a tremendous bank of creative potential !

What exactly are the results of tapping this rich creative output ? Matsushita have reavealed the following figures :

1.	Accepted ideas	—	10 per cent or above
2.	Savings to the Company flowing out of the above acceptance	—	$9 million
3.	Awards given away to the employees	—	$300,000.

It is true that the Japanese apparently do not reward their employees enough considering the benefits that the Company have realised. This is so however, only in comparison with the U.S. Government who have offered 50-50 sharing of benefits to their contractors, though their awards system to in house V.E. proposals is not exactly known. In India, how many industries have well-operated suggestions systems ? With what results ? Matsushita claim that their slogan—not only published or painted on signboards, but also instilled in practice into their employees is

"LEARN FROM EVERY ONE WITH *OPEN MIND*
TO CREATE PLEASANT WORKING PLACE
WHERE WE CAN FIND VALUE OF WORK!"

In English perhaps, this may not look inspiring but we are told that, in Japanese, the above exhortation inspires tremendous Creativity from their men.

(... ... ... Source—International Management Feb., '77
Published by
Mc. Graw-Hill of U.S.A.)

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A further instance of creativity adding greatly to company savings, comes from the U.S.A. Singer's Link Division, report in their house magazine "LINK LOG" that the employees in their Binghamton works have saved $3,507,736. The suggestions came from nearly 200 employees and surpassed their targeted cost savings for the year by over $ 12,000. Singer, of course, have rewarded their employees both in cash and in kind.

These are only a few examples which have come to our notice through the international contacts established by INVEST to provide maximum information to readers. It is quite possible that a number of companies in India do also have specific Award Programmes

in order to motivate all personnel to come up with their ideas. In our country, however, all such systems have a way of remaining on the shelves and we rarely make them operational during daily activities. A comprehensive V.E Programme, together with a well designed system to encourage suggestions and obtain them in writing as quickly as they are thought of, will go a long way in converting creativity into rupees and paise.

Talking of creativity, it wiil be of interest to mention how deeply the USA—at present the wealthiest nation in the world—feel committed to a systematic exercise of man's capabilities for invention and innovation. In a special cover page article devoted to Creativity and Innovation, Newsweek (June 4. 1979), the well known American International News Magazine have indicated how high are the amounts being spent by the technologically advanced countries on Research & Development. For example, the USA spends 2.5 to 3% of its GNP on research while West Germany and Japan are only half a percent behind. In absolute terms, the USA Federal Government and private industry together spend a staggering sum of nearly $35,000 million every year, and inspite of this, Americans are this year bemoaning the fact that investment in R & D in the United States has actually been coming *down* in recent years. According to a former Presidential candidate, Mr. Adlai Stevenson who is currently Chairman of the US Senate Sub-Committee on Science and Technology, "the United States is a rich and resourceful country. But its spirit of adventure and innovation may be drying up. *Nations fail when that happens.*" (The emphasis is ours.) For a country like India, it is not failure but survival that will stare us in the face if we do not learn to innovate. In fact, Newsweek goes further to describe the evil conequences of not being one up on Creativity.

> "The consequences of not keeping ahead could be extremely serious. At the most basic level, *less innovation* means that fewer new, improved products are available to American consumers in the market place. But it also has *broader economic effects.* Without innovative breakthroughs, industry creates *fewer jobs* . Factories and equipment *become* obsolete. Productivity *growth declines.* And that only feeds the enervating inflationary spiral : if industry cannot turn out goods and services more efficiently, it cannot compensate for rising costs except by *hiking prices.*"
>
> [Note : emphasis ours.-Ed.]

In Value Engineering, we make a differentiation between INVENTION and INNOVATION. According to the Oxford English dictionary, the word 'invent' means.

"to devise, originate (new method, instrument) etc." The word 'Innovate' has been equated to

"bring in novelties ; make changes in....."

Value engineers are often asked whether VE creative activities are not the same as those of Research and Development. The latter represent vital functions which have more relation to inventing completely new processes or methods or products which, not infrequently, may not have existed before at all in man's hishtory. On the other hand, Value Engineering has more to do with innovation whereby the VE team members try to draw from their variegated

knowledge and experience, both in the business and in the personal fields, in order to see how they can devise or adapt that knowledge to provide alternate ways of securing the function under study. Occasionally, these efforts could result in a new invention. More often, however, the VE creative endeavour will result in partially modifying, changing and thereby improving the present system to yield a substantially higher value results in other words, a result of innovative rather than an R & D effort.

To quote an example, we may refer to Larry Miles' famous instance of the 14ft × 7ft concrete well usually specified by the U.S. Atomic Energy Authority many years back for protecting the community whenever a nuclear or other high radiation facility was proposed to be built. The Value Engineering study led to the elimination of concrete and instead, the building up of a 14ft × 14ft earthen mound to accomplish the function "stop radiation" at 1/10th of the cost. Here, no new invention was made but only an innovative thought of why earth, mud, trash and rubbish cannot stop radiation occurred to one of the team members engaged on the study. This creative idea which came up during the Value Engineering Job Plan was put to trial, and found successful. It would have been an invention if completely new materials were developed in a labratory, such as the whole range of synthetic products, in order to yield the same function. R & D is more concerned with the latter task rather than with innovation though we have various examples of how R & D Departments in different industries have gratly profited by utilising Value Engineering techniques in addition to their own in their fields of work.

While on this subject of creativity, it will be of interest to have some idea of what strange methods are now being tested and even considrable funds provided in order to make them work for the benefit of man.

1. The British Ministry of Agriculture have funded a project for recovering the heat from cow's milk. Cow's milk emerges at body heat of about 32°C. It is then deliberately cooled to about 4°C to enable safe storage and transit. Why should we lose this heat especially when million of litres of milk are used every day ? In Britain alone they expect to save annually one million pounds worth of energy by these means !

2. Sumitomo Metal Industries Limited, Japan have been successful in making coke from non—coking coal—something that no fuel expert or metallurgist would consider possible even today.

3. Waste newspaper has been utilised to make sugar and protein by the use of certain micro organisms. Several countries such as the U.S.A., Sweden, Japan and even India and Saudi Arabia are said to have been successful in this effort.

4. Conversely, a British organisation has found a method of making paper from banana waste.

5. One of the most interesting of these creative efforts has been in making paper from hardstone. A Soviet scientist has drawn thin filaments from molten basalt stone. The filaments are then impregnated with resins to get papers 5

times thinner than what we use now generally but yet 100% heat resistant as well as proof against moisture and cold.

Many of these are no doubt R & D achievements, but let us give a thought to the creativity of man's intellect which made :

1. Somebody THINK of it in the first place, and
2. For some others to realise the potentials of these ideas and then provide funds and encouragement to make them commercially workable.

Such is the power of creativity which is a corner stone of the Value Engineering Job Plan. It exists in all of us provided we are willing to try it without fear or hesitation in the allotted Phase of a Value Engineering activity. It can give us tremendous results though we may not be aiming at cataclysmic, new inventions such as the discovery of radium or pencillin or the development of the transistor and the ferrite module. VE aims at a very large number of experienced personnel finding a very large number of higher-value alternatives, each giving us a small return but together contributing substantial benefits to their employers—in other words, many of us may be ordinary men, but VE and creativity will help us to get extra-ordinary results from ordinary men !

Some idea of the awareness of VE in the Corporate sector and in particular, the job opportunities that VE/VA can offer, were also indicated in April '79 INVAVE. It will be interesting to know that the following additional companies have asked for specific VE experience and knowledge in the different positions advertised by them,

	Company	Position	Media
1.	Larsen & Toubro Toubro Ltd.,	Source Development Engineers	The Hindustan Times, New Delhi on 18.5.1979
2.	Blue Star Ltd. New Delhi	Materials Manager	The Hinudustan Times dated 23.5.1979.
3.	Gajra Gears Pvt. Ltd., Dewas (MP)	Industrial Engineer	Times of India dt. 17.5.1979.
4.	Kelvinator of India Ltd., Faridabad	Senior Industrial Engineer	The Hindustan Times, dated 12.3.'79

V.E. Qualified readers had therefore better watch out. The importance and the need for this speciality is being increasingly recognised and apart from full time positions for V.E., it is more often being asked for as a specific *additional* qualification for various allied positions such as in the fields of work Study, Industrial Engineering. Materials Management, Production and Quality Control.

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and Mining
and Chemicals
and Refractories
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	Expansion from	to (in million tonnes)
ROURKELA	1.0	1.8
DURGAPUR	1.0	1.6
BHILAI	2.5	4.0
BOKARO	1.7	4.75

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Message from the President of the United States of America to the Save International Conference on *Wold Value* Held in Washington D.C.—May, 1979.

The White House

WASHINGTON

March 29, 1979

It is a pleasure for me to greet the members of the Society of American Value Engineers on the occasion of your Twentieth Annual National Conferench.

The technique of value engineering has proved to be a reliable analytic method of achieving cost reductions, conserving energy, improving services and increasing productivity in industry and government. It is being used effectively by the Department of Defense and, together with zero-based budgeting, could be helpful to other Federal agencies in establishing more cost-effective programs. At a time when we are fighting inflation and generally seeking to improve the efficiency of government, this would indeed be welcome.

Over the years value engineers have been among the staunchest advocates of this noteworthy management technique. I applaud your effective leadership in this regard and wish you all a stimulating and productive session.

Sd./-
JIMMY CARTER

Conference on "World Value"

Speech by INVEST President

Ashok Kumar Sethi

Two Members of INVEST attended the 19th International Conference held by the Society of American Value Engineers from May 23-26 at the Capital Hilton, Hotel, Washington D.C. Our President Mr. Ashok Kr. Sethi also presented a most interesting and thought-provoking paper entitled "Improving Small Farm Productivity" which was designed to focus the attention of the nearly 500 delegates at the Conference on the need for giving top priority to development in rural areas of the developing world, if World Value was to be realised in fact and not merely remain as a concept. It is learnt that the paper was not only well-received but acclaimed as most practical. The second INVEST member to participate in this Conference was Mr. S.S. Iyer, Works Engineer Standardisation) of Tata Iron & Steel Company, Jamshedpur and we hope to publish a story from him in our next issue.

President Sethi was specially invited on the opening day of the Conference to deliver a speech right at the inaugural ceremony; he was one of 4 such Presidents of different National Societies to be accorded this signal honour on behalf our Society. In addition, SAVE, USA, generously presented a beautifully engraved plaque certifying that INVEST is now an Associate Society of SAVE and welcoming us to the international community of Value Engineers. Made of brass with lettering on a black blackground, and fixed on to a wooden base, this plaque now hangs proudly in our Society office in New Delhi.

We reproduce below President Sethi's speech at the inaugural ceremony verbatim.

"Mr. President, Ladies and Gentlemen. It is a great pleasure and privilege to be in your midst on the occasion of your 20th birthday, and to bring to you the greetings and good wishes of the Members and the Governing Body of the Indian Value Engineering Society.

"In the words of Confucius, 'A journey of a thousand miles must begin with a single step'. Similarly, INVEST has begun small, but its hopes and aspirations are large—not the least of which is to promote greater international interaction amongst value engineers. In this context, I would like to take this opportunity to pay tribute to the Society of American Value Engineers for having made the theme of this Conference "World Value", thereby confirming the concern of VE practitioners around

the world in solving problems pertaining to human welfare and making this a happy and a prosperous world. This is very much in keeping with the rationale for setting up INVEST, because we believe that VE has a critical role to play in the advancement of developing countries which are perenially faced with shortages of critical resources. I am quite certain that your deliberations during the next few days will identify ways by which the vast amount of knowledge and experience acquired by VE specialists and organizations in the advanced countries could be beneficially used by their counterparts in the developing countries. I can assure you on behalf of INVEST, that any meaningful proposals in this regard would receive, its most earnest consideration.

I would like to humbly submit that amongst all the international programmes for economic uplift, the area where most meaningful contributions could be made, will be through the application of VE techniques in the successful adaptation of technology to the circumstances of the recipient location. This is an area where INVEST strongly believes that counterpart societies in developing and advanced countries can work together to help establish mechanisms for the use of VE techniques by technology donors and international aid giving agencies.

The challenge to VE in the future will therefore lie in making technology "culture specific". It is a challenge which will capture the imagination of those who realize the potential of value engineering technological ideas in solving problems pertaining to human welfare. The real opportunity for Value Engineers around the world, whomever they workfor and whatever they work at, will be in meeting this challenge.

Mr. President, on behalf of INVEST, I would like to wish this Conference all the success it so richly deserves."

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CAN YOU CONDUCT A VE PROGRAMME..... ?

SAVE, USA usually recognise only their Certified Value Specialists as professional VE trainers for guiding result-oriented Project Workshops. However, we in India are not in the happy position of having several CVSs in the country through it may not be too much to hope that this position will improve within the next few years. Nevertheless, in the meanwhile. INVEST would like to have on its register, a list of their members who have had experience of functioning as Faculty Members—either on their own or with others—in training/Project Workshops. Such members may please write to INVFST *giving details of VE work done by them* so that INVEST can recommend their names to organisations/individuals asking for such services at different centres all over India.

Value Engineering Around the World

The 20th International Conference of the Society of American Value Engineers (SAVE), U.S.A., was successfully held at Washington D.C. from May 23 to May 26, 1979. This naturally was the star feature on the VE firmament last quarter. Elsewhere in this issue, INVEST President Ashok Kr. Sethi has given a first hand account of the Conference Highlights.

We published, in the January 1979 issue, a message from the Conference General Chairman, Mr. Donald E. Parker. Readers may be interested to know something about the Conference Chairman. Mr. Parker has been the Director of Value Management for the General Services Administration—Public Buildings Services (GSA/PBS) for the last 5 years. The GSA is one of the major organs on the civil side of the US Federal Government and includes within it—various departments corresponding to our :—

(i) Central Public Works Department (CPWD).
(ii) The Directorate General of Supplies & Disposals (DGS&D).
(iii) The Directorate Gcneral of Commercial Intelligence and Statistics. and
(iv) The National Archives,

to name only a few.

The Public Buildings Service as well as the Federal Supply Service of the GSA have very active Value Engineering. Programmes administered through all the 10 Regions of the GSA. Donald Parker is the Chief of this set-up in the GSA Headquarters in Washington D.C. Working with him in this unit are two highly competent Value Engineers namely, Mr. Glenn Woodward and Dale E. Daucher.

Donald Parker has authored the Value Engineering Supplement which provides the theory backup for a full semester course of 11 lectures developed by the Value Foundation. This latter is a sister body of SAVE, the prime difference being in its ability to receive donations and utilise those funds for the propagation of VE without attracting taxation problems from the Internal Revenue Service (IRS) of the USA. The Value Foundation President, Mr. Harold Tufty is not unknown in India, both for his services in the United States Information Services at Madras for several years in the 60s and more recently, as a Programme Director for Value Engineering Seminars organised by different bodies in India. He is one of the key figurs who helped to make the 1979 International Conference a fine success.

Those interested in procuring the lecture material for the full semester course may write to the Value Foundation, 986, National Press Building, Washington D.C. 20045, USA.

To American Universities, the Value Foundation give this material free of charge while, to industries, the price is $ 500 per set. It is possible that the Foundation may similarly give it free to Indian Universities and educational institutions or at a special concessional price.

INVEST President, Mr. Sethi attended the 3-day conference, participating in many sessions and viewing hundreds of exhibits displayed by the U.S. Govt. departments, industry and individuals. Here is his report :

"Twenty years ago, the Society of American Value Engineers (SAVE) was founded to spread the application of value methodology. The twentieth birthday of SAVE was celebrated on May 23rd at the Capital Hilton, in Washington D.C. The occassion was the SAVE International Conference on 'World Value' and was aimed at the presentation of VE projects successfully completed which would help in solving international problems concerning energy, food, housing, transportation, health etc. The international Conference with participation by eleven nations, attested to the growth and utilization of value engineering to meet world wide problems of less than best value for expended resources.

Speaking at the inaugural ceremonies, the Chief Guest, Senator William Randolph stressed that Government and industry leaders share their achievements and in confrustrations rolling costs and providing better value at all levels of the economy.

Specially honoured at the inaugural ceremonies were the Presidents of the National Societies of France, India, Japan and South Africa who received plaques confirming their international affiliation with SAVE.

Value specialists from arround the world presented case historics, new techniques, and "how-to" sessions to inspire, guide and teach attendees on the better application of value methodology to an ever widening range of situations.

The VE Exhibition this year was among the largest ever. Prominent amongst the exhibitors were General Motors and several construction management companies who have effectively used VE in controlling costs in large scale projects.

The success of the 20th SAVE Conference is testimony to the ever widening international usage and acceptance of VE as one of the purposeful ways of solving the problems that confront mankind."

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The newly formed organisation for Value Engineering in Fiance—Societe FRANSCAIS POURE' ANALYSE DE LA VALOUR (SFAV)—have successfully held their first National Conference in Paris on March 29 and 30 this year. According to the two American Specialists, Rudolph H. Kempter and Robert H. Rossman, who attended it on their way to India recently, the Conference was held at the Palais des Congres—Port Maillot and was attended by 300 delegates. The Conference was presided over by Claude Jouineau, whose address we had given to INVAVE readers in our October 1978 Edition. However, it is repeated here for those interested :

Claude Jouineau C/o CETEGE
12, rue du Helder, 75009
Paris, France.

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Publicity for Value Engineering

In our April edition, we had given some excepts from different prominent dailies, of the news stories published therein about Value Analysis/Value Engineering. The first ever VE exhibition organised by INVEST—or for that matter by anybody in India—was well covered by some of the Newspapers. The Economic Times published the following story in fair detail:

Benefits of Value Engg.

NEW DELHI, March 13. "Value Engineering is a concept which has so far been neglected but which has tremendous opportunity and must be encouraged in the design of our industrial products" said Mr. Mantosh Sondhi, Secretary (Steel & Mines), Government of India, inaugurating an exhibition on value engineering organised by the Indian Value Engineering Society (INVEST) at the India International Centre here last week. The participants included the Indian Army, the Navy, the Steel Authority of India Ltd., Indian Railways, Bharat Heavy Electricals Limited, Mining and Allied Machinery Corporation from the Public Sector and Walchand Group of Industries, Bharat Forge Limited and Sara Technical Services Private Limited. Several items were presented showing the design existing before value engineering study as well as the improvements effected after completion of the value engineering effort.

Mr. Ashok Kumar Sethi, President of INVEST, explained how the designs of several products value engineered by SARA, not only costed less but were better in appearance and function. Sara has undertaken such studies for several major organisations in India and abroad. INVEST is organising a five-day workshop in April in New Delhi to demonstrate practical work on selected projects".

Our Society have been making tremendous efforts to secure more publicity for the VE discipline, and from the kind reception these efforts have had with leading dailies such as the Hindustan Times, Indian Express, etc., we are sure that impressive VE stories will appear in these papers shortly, if not already before this edition reaches our Readers. BUSINESS INDIA, one of the leading journals from Bombay for the Corporate World, have given a tremendous fillip to VE by prominently publishing INVEST President, Ashok Kumar Sethi's simple and forthright article entitled "Management : V.E. Basics". INVAVE are happy to reproduce the entire article for benefit of their readers in the next issue.

By far the most prominent story on VE published so far in leading Indian dailies has come from Hindustan Times, New Delhi. The paper with the highest circulation in the North, the Hindustan Times reporters took special pains to gather information on the use of VE and then make a report compiled by themselves. The story that follows, which has been reproduced from their June 18th, 1979 New Delhi City Edition—Centre page Focus

feature— will show clearly how well the subject has been explained in a manner that the public can easily understand—a point which sometimes needs re-stating for the benefit of Value Specialists themselves who also may tend to take an easy comprehension of VE by the public for granted.

Value Engineering

A SENIOR Army Officer travelling by train, discovered that the Indian Railways were using 50 cm × 80 cm steel plates for pasting reservation charts outside the bogies. Why use steel plates, he thought. Why not fix the charts on predetermined stenciled areas out-side the bogies ? He dashed off a note to the authorities. His idea, if implemented, couldresult in a saving of thousands of rupees for the railways.

This idea, classified in the proper jargon, is the simplest from of value engineering, a discipline barely 30 years old. It is basically research into the cost and function of a product and devising of a cheaper but as effective alternative.

A value engineering study of steel tyres for railway rolling stock was done by the Western Railway in 1973. The team of value engineers found that the annual uage cost of 1000 steel tyres was Rs. 8 lakh. The raw material used was special 54 (railway steel to IRS specific). Its tensile strength was 110-125 kg sq mm. The team set about asking questions : (1) Why this steel ? (2) Why such a high tensile strength ? (3) Where do we use it ? (4) Why not use lower tensile strength of 78-90 kg also provided in the railways pecific ? (5) What was the tyre intended for ?

The team then worked on the answers : The basic function of the high tensile strength is to withstand stresses. The need for this high strength is only on coaches of the Bombay suburban trains subject to high decelerations, braking and maximum utilisation. For the balance used on long-distance passenger trains, a tensile strength of 78-90 kg/sq mm is acceptable. The changeover was made and it resulted in a saving of Rs. 4 lakh.

A value engineering (VE) society which spreads knowledge of VE techniques, claims VE is the need of the hour in a developing country like India. Obsolete and heavy pre-war design machines are still being run at heavy cost both in the private and public sectors. Given a fresh approach like VE, costs can be slashed anywhere between 10 to 100 per cent. Some of the Indian companies in which formal VE programmes exist and which have effected major savings are : Bharat Heavy Authority of India Ltd., TELCO and Electricals Ltd., Steel TISCO, Jamshedpur, Walchandnagar Industries Ltd. and Automobile Products of India, Bombay.

The Indian Army which has a fruitful cell for VE since 1971, has saved over Rs. 3 crore on a number of items. A number of studies done on the bullock-cart are most interesting and are being implemented piecemeal in some areas.

Taking perhaps an extreme view, one needs to caution VE enthusiasts to see it doesn't develop into another path to computerisation ! Garuda
(Hindustan Times New Delhi 18.6.79.)

S. N. Mishra Commission on Government Expenditure

The Government of India recently constituted a high powered Commission headed by Shri S.N Mishra, M.P., to examine in detail the reasons for the enormous increase in Government expenditure, both on developmental and non-developmental account, which is considered excessive in relation both to the growth in national income and with reference to the Government Revenue over the years. The Commission comprises two Members of Parliament, a former Cabinet Secretary and two officials belonging to the Union Ministry of Finance.

According to the data so far collected by the Commission, the total Government expenditure during 1978-79 stood at 35% of the national income for that year vis-a-vis only 9.6% in 1950-51. The Commission is concerned that much of the increase in Revenue has been absorbed by the Government's own *non-development* expenditure which was 19% out of the total revenues in 1978-79 as against only 6.6% in 1950-51. The increase therefore, represents 300-400 per cent in relation to either of the above bases adopted.

While the Mishra Commission is understood to have sought details of the expenditure from various Government Departments, it has also been receptive to various professional, industrial and other bodies/institutions in the country who have come forward to offer their suggestions and help to the Commission in its work. It is a matter of pride that INVEST is one of these Organisations and apart from submitting to the Commission a preliminary idea of what is V.E. and what are its potentialities, they have also had an opportunity to personally explain these points to one of the members of the Commission.

It is expected that INVEST will be officially invited in due course to participate in the deliberations of the Commission and assist them in arriving at their findings and recommendations. Readers are invited to come forward with their ideas, suggestions and views, duly backed up with as much data as possible, not merely to point out the areas of large increase in Government expenditure, but also to *constructively* indicate their causes and suggested lines of remedy. Naturally, members of INVEST, it is hoped will apply VE techniques in full measure in arriving at the suggested solutions. However, those who wish to write to the Commission direct may also do so to the following address :

Member Secretary,
The S.N. Mishra Commission on Government Expenditure,
C/o Department of Expenditure, Ministry of Finance, North Block,
New Delhi - 110001.

If copies are endorsed to INVEST, the same will be made use of in making personal submissions to the Commission as and when INVEST have an opportunity to do so. It may be of interest to mention in this connection that SAVE, USA, has testified in similar fashion to various Senate Committees and United States Congressional Committees on the subject of V.E. This has been one of the main reasons for the increasing use of V.E. in various organs of the US Federal Government as well as some of the State Governments in the U.S.A.

V.E. Quiz

This Quiz is the first of a new feature we are starting in this issue. Many claim to know VA/VE but when they actually try to test themselves about their knowledge on the subject, they may find the position quite reavealing. This is true of many activities where we tend to take things for granted and then are surprised when the reality is found to be different. It is possible also that many may find their answers correct in respect of the questions; for them, these Quizrzs will prove a refresher. We have found the Quiz an absorbing method of increasing interest and understanding of this subject particularly during VE Seminars and Workshops.

So, here we go with the first Quiz of 25 quesions; the answers will follow in the next issue.

A. Indicate *true* (T) or *false* (F) to the following statements :

1. Value Engineering concerns itself with the reduction of cost somehow or other irrespective of the standard of function performance.

2. In performing VE, it the best to do it as early as possible such as in the concept or feasibility study stage of a project or product rather than at a later stage such as during constrution or production.

3. Use or work functions only give good value and aesthetic functions have no claim whatever for allocation of cost.

4. A Company already having several service departments such as IE, OR O&M SQC etc. does not require to practice VE.

5. Habits and attitudes sometimes act as obstacles to the success of VE study as well as in identifying areas of unnecessary cost.

6. Functions should be described in detail in one or more paragraphs.

7. In a Creative Session, the idea-creating process or stage should be completely separated from the idea judgement or evaluation stage because concurrent evaluation prohibits the free flow of more and more ideas.

8. Since top management do not actually participate in a detailed VE study, it is advisable not to involve them or expose them to the VE methodology till final recommendations are ready.

9. In VE, great importance is attached to total Life Cycle Cost (which includes recurrent costs of operation and maintenance) rather than only to initial outlay.

10. A VE team is responsible not only for making recommendations but also to see through the problems of implementation till the final results are received, audited and presented to management.

B. 11. In selecting a project for VE study which of the following factors will constitute the most essential pre-requisite for potential benefits (Circle the one you select).

(a) It must have many high cost areas.

(b) It should be a problem area.

(c) It appears to have several areas of avoidable cost with opportunity to develop alternate approaches.

(d) It should fall within the jurisdiction of the team members or at least one of them.

12. Complete this sentence by circling the best answer—Good Value exists when a product or service :

(a) has appropriate cost and performance.

(b) has low cost and high performance.

(c) has high cost and high performance.

(d) has high cost and low performance.

(e) has low cost and low performance.

13. Select the correct definition :

(a) Function is what makes an item work or sell.

(b) Function constitutes the operating link between various parts or components of an assembly.

(c) The end use, as different from pleasing appearance or beauty, constitutes the function of an item.

(d) Function is defined as the overall performance of the subject item.

14. Which of the following is most essential for a successful value study :

(a) High technical ability in all aspects of the subject.

(b) Good human relations.

(c) Readiness to point out problems and disadvantages.

(d) Seeing only good points of a proposal.

15. The creative phase of the VE job plan should include the use of which of the following techniques ?

(a) Seek out specialists and evaluate by comparison.

(b) Assign costs to all ideas.

(c) Try everything, generate a large quantity of ideas.

(d) Perform brainstorming and evaluate ideas for potential investigation.

16. Compare this sentence by circling the best answer—The kinds of economic value generally considered in VE practice are :

(a) good and bad values.

(b) exchange esteem and use value.

(c) minimum and maximum values.

(d) value with and without inflation taken into consideration.

17. Which of the following is the most constructive reaction to a VE proposal for change in design of an item :

(a) A good engineer will never even think of such an idea.

(b) The proposal is sure to be very costly.

(c) It would be desirable to build a prototype and conduct tests and trials before finalising the design.

(d) The idea is radically different but very good and we may straightway start mass production.

18. Select the true statement out of the following :—

(a) The concept of Value Analysis was originally thought of in the USSR.

(b) VE is widely practised in all sectors of industry in India.

(c) European countries lead the world in the most successful VE applications.

(d) VE was born in the USA and gradually spread to countries like Japan, West Germany, Scandinavia etc. and is coming more and more into prominence in India since the last few years.

19. Circle who among the following invariably looks for good value.

(a) the manufacturer

(b) the trader

(c) the customer/user

(d) the value engineer

(e) the design engineer

20. Who is considered as the father of value engineering ?

(a) Peter Drucker

(b) Sharu Rangnekar

(c) Lawrence Miles

(d) Prof. Mahalanobis

(e) Paul Appleby

C. Circle the correct or most appropriate word/answer.

21. The key to man's many inventions has been

(a) hard work.

(b) ready funds.

(c) research.

(d) readiness to try every new idea.

22. A developing economy like India's should

(a) not waste its funds in research.

(b) import freely.

(c) judiciously combine its own R&D, native capabilities and external know-how for meaningful progrerss.

(d) seek foreign collaboration in every field.

23. A company averse to change may well

(a) die out.

(b) defeat its competition.

(c) easily maintain its share of the market.

(d) prosper and expand.

24. As experienced, senior managers, we should

(a) curb criticism from our junior officers.

(b) expect our orders to be carried out without question.

(c) ignore objections or problems anticipated by our subordinates in carrying out our plan of action.

(d) encourage constructive criticism and proposals for change even on a radical basis.

(e) discourage other departments from commenting on matters falling within our jurisdiction.

25. Services like Manpower Control, Inventory Control, Statistical Studies, IE or VE seek to

(a) unnecessarily interfere with daily production work.

(b) find faults in the plant's established methods of working.

(c) help in taking care of important aspects which production personnel tend to overlook while dealing with daily emergencies.

(d) increase their own spheres of influence & importance.

(e) justify their existence by tall claims of great achievements.

—:o:—

An Engineer's Appeal

Too often, in our daily working lives—in the office, field or factory floor—many of us engineers notice several areas of activity crying for improvement, elimination of waste and modernisation of methods. The daily pressures on us, however, are so reat that we rest content with expressing regrets or at best dash off a note of suggestion to somebody in the heirarchy. One can understand this situation for executives in charge of production, procurement, marketing or manufacturing as they invariably have to function under severe constraints of time, markets, labour or union problems, Government restrictions and Management orders. Relatively speaking, the Design Department executive ought to be in a more free position for exercising their creative thinking abilities towards material and labour conservation as well as other methods of securing greater value from money spent. We don't however, find much evidence of such initiative and drive to increase value, even by design engineers.

In this situation, it is a refreshing change to observe that one such engineer has expressed himself strongly in favour of design engineers avoiding a conservative posture and deliberately seeking to eliminate unnecessary costs built in due to high factors of safety. We refer to a letter dated 14-7-1977, written by Shri Asim Mazumdar to The Economic Times and published in the New Delhi edition dated 23-7-1977. Though 2 years late, we came across this letter recently and felt it would be appropriate for it to find a place in INVAVE though Mr. Mazumdar has not referred anywhere, in his letter to V.E. We intend forwarding a copy of this issue to Mr. Mazumdar through the courtesy of Economic Times and hope that we will receive from him a clearer indication of how economies can be achieved through directions he has suggested. We publish below Mr. Mazumdar's letter verbatim and invite comments thereon by readers.

Material Conservations

Sir : Mr. S. Balkrishnan (E.T., June 23) has raised some interesting points but they concern mainly scraps and off cuts. Equally important is to attack the problem at the origin of the use of materials, i.e. at the design stage.

Design engineers in India generally tend to be conservative. It is customary to have built-in 'factors of safety' in the designs which a close scrutiny will prove to be 'factors of ignorance'. In my field of operation-electrical switchgear and instrumentation at least 20% reduction in consumption of basic metals such as steel copper, aluminium and zinc can be achieved if only customers shed their fascination

for 'robustness' which to many of them ls obtainable more by use of increased quantities of materials than by optimisation based on post-war technology. A humdrum but very widespread customers' practice is to specify 3 mm. thick sheet steel for all kinds of enclosures for electrical equipment when for the same performance, 1.5 mm. thick sheet with judicious stiffening will be more than adequate. And often eiectrical engineers are asked to design conductor systems on the basis of the pre-war thumb rule of 1000 amps/square inch for copper when proper design of enclosure, painting of surfaces and other steps can allow 1500 amps./sq. inch thus saving substantial quantities of (imported) copper. And how about asking for designs for 50°C (122° F) ambient (which even in the hotter parts of India occurs probably less than 60 hours in a year) thus forcing an unnecessary increase in conductor size[1]. One could cite examples ad infinitum.

ASIM MAJUMDAR

Bombay, July 14.

ET/N. Delhi 23/7/77

INVEST Membership-Services

A. VALUE ENGINEERING FILMS FOR HIRE

TERMS AND CONDITIONS FOR LOAN OF THE FILMS

1. INVEST have the following three colour films on or connected with Value Engineering :

   (i) "Evaluation of Function, Cost and Worth"—This describes how a small igniter assembly was successfully value-engineered and cost reduced by over 90% by the US Department of Defence. —27 minutes

   (ii) "The Real Security"—outlining the importance of accepting change for progress and using creativity for the purpose. The famous US Management Consultant, Joe Powell is the main character in the film. —23 minutes

   (iii) "A World of Difference"—outlining how Defence contractors in the USA can profit by submitting VE CPs (Value Engineering Change Proposals) to the Department of Defence and share in the net savings. —15 minutes

2. The films can be taken on loan at the following rates payable in ADVANCE.

   Rs. 100/- each per screening per film for items (i) and (iii) above.
   Rs. 150/- per screening for item (ii) above

   It will be *the responsibility of the borrower* to take delivery of the films from the Society office and return the same intact at the same place.

4. In case of out-station parties, their offices in Delhi/New Delhi shall similarly collect the films, arrange for their safe transit and return, duly insured for an amount of Rs. 5,000/-

5. Normally, the films should be returned after 24 hours by users in Delhi area and within 72 hours by users outside Delhi. If the films are delayed beyond this period for whatever reason, additional loan charges at the same rates above per day will be payable.

6. The insurance amount of Rs. 5,000/- does not relate to the full value of the films; it is intended merely to increase the care and security of the films in transit. In

case of loss or damage, the borrower will pay the full cost of fresh purchase of the 3 films by INVEST from USA. At present cost, this may amount to as high as $ 800-1000 for the 3 films exclusive of shipment, packing insurance etc., charges. A borrower will be deemed to have accepted liability to pay these costs in case of loss or damage while in his cusotody.

7. The films have been procured by INVEST specifically to expand the knowledge and practice of VE in India. Every borrower is therefore requested to take the utmost care of the films and return them promptly to INVEST. They are also requested to intimate the number of times films are screened and pay the amounts accordingly as INVEST has no means of securing this information except from the borrower himself. The money will go to enable INVEST to grow and expand its services to the country.

8. Please return this sheet duly signed below in token of acceptance of the conditions, every time you with to hire the films.

I, Shri on behalf of have read and understood the above conditions and thereby on behalf of my Company, accept the same.

Signature & date

NAME

DESIGNATION

OFFICE-STAMP:

Contd.....

. VALUE ENGINEERING LITERATURE FOR SALE

INVEST are glad to inform you that a very limited number of copies of the background papers prepared in connection with the first 5-day Value Engineering workshop conducted by INVEST and concluded recently at Hotel Maurya New Delhi, are available for sale. The full set of papers, contained in 2 attractive folders with the insignia and name of INVEST printed in gold, comprise the following :

1. V.E. Workshop—Programme Agenda in 10 pages.

2. V.E.—An Introduction, based on papers received from Kempter-Rossman, International, USA, who were co-faculty members for the workshop in 50 pages.

3. More Value Through Design—A Case for Indian Industry by INVEST President, Shri A.K. Sethi, containing also 8 photographs of successful Appearance Engineering Examples resulting from V.E. Studies—in 10 pages.

4. VEVA Programmes—Organisation and Control also by Shri A.K. Sethi, President, INVEST, setting out the introduction of V.E. in a company—12 pages.

5. V.E. for the Indian Economy by S.S. Venkataramanan highlighting the benefits obtained in the last 30 years and the crying need for Indian Industry to make full use of V.E.—in 12 pages.

6. V.E.—Top Management Views Part I by S.S. Venkataramanan—in 15 pages.

7. Cost cut through VE—Views of the US Government Part II—in 11 pages, also by S.S. Venkataramanan

8. V.E. Project Work Book—Printed most attractively and based on years of experience and use—by S.S. Venkataramanan—in 80 pages.

9. V.E. Project Recommendation Book for submission to Top Management—Printed attractively in only 17 pages for use of Teams in submitting their proposals after a V.E. study to top management for decision regarding implementation by S.S. Venkataramanan.

All the above are contained in 2 beautiful folders.

The full set has been priced at only Rs. 150/- for non members and 125/- for INVEST members; packing and postage Rs. 15/- extra per set.

C. WORKBOOKS FOR ACTUAL VE WORK

In addition, INVEST have also printed adequate copies of the V.E. Project work book and recommendation book (S.Nos. 8 and 9, above). These are separately available for sale to all those interested in carrying out VE studies of the specific items/projects in their work areas or companies or departments, using not only their knowledge of VE but also the considerable VE knowhow published in the 3 editions of 'INVAVE' released so far. These are priced at only Rs. 25/- per set of 2 books (for non-members) and Rs. 20/- only for members. Packing and postage etc. at Rs. 5/- per set.

Please send your orders to the Society office before stocks run out. Demand drafts for the amounts according to the number of copies you order or your cheque (with Rs. 5 extra for out station collection or charges where applicable) should accompany your order, which can be sent in the form of a simple letter, addressed to

SECRETARY, INDIAN VALUE ENGINEERING SOCIETY,
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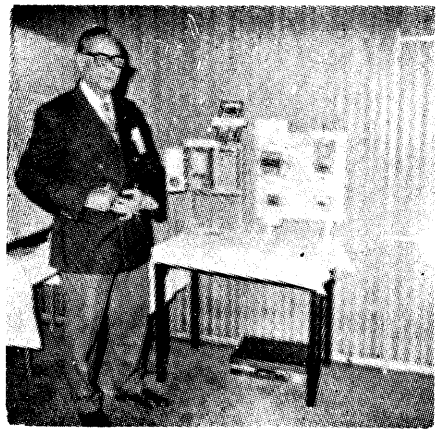
Tel : 43518/61-6141



Commodore Chandra with the exhibits from the Indian Navy at the first VE Exhibition ever held in India. This was on March 4, 1979 at New Delhi.

Mr. D.K. Sen of BHEL answering a point at the BHEL VE Exhibits' stall. To his right are Mr. Sondhi, Mr.V.C. Paranjape, Chairman, Wagon India Ltd., Mr. S Koteeswaran, Dy. Secy., Min. of Defence and Admiral Parkash.

Lt. Col. K. C. Garga explaining the Indian Army's exhibits to Shri Mantosh Sondhi, Union Secretary for steel, who inaugurated the Exhibition.