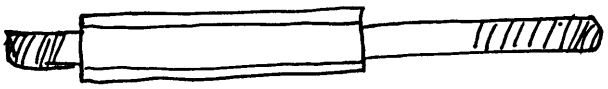
PRECISELY WHAT IS MOST SIGNIFICANTLY NEW AND DIFFERENT IN THE VALUE ENGINEERING AND ANALYSIS APPROACH AND TECHNIQUE?

This will be illustrated by comparison with a more traditional approach.

A spacer stud is required to fasten a timer to an appliance. Naturally quantities are large. Steel is acceptable.



The Conventional Approach

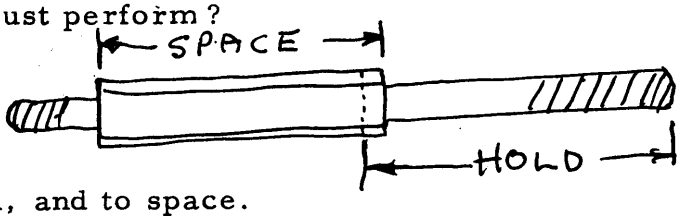
(It is not intended to down-rate the conventional approach, but rather to highlight differences.)

The engineer, with his manufacturing methods and processes man and his draftsman, if such exist as separate people, considers different types of machines and of manufacturing processes for making this spacer stud, or one which would accomplish its function. The company has a well-equipped screw machine department and it seems obviously a screw machine part. Design proceeds along the line of securing standard steel stock for economy of purchase and ease of procurement, arranging to buy it in the largest practical economical lot sizes, buying hex stock since it is the same cost as round stock and provides for the use of a wrench at assembly, selecting proper tooling for the screw machines, developing maximum efficient cutting speed, planning the most efficient screw machine cycle, developing appropriate time standards, making arrangements for automatic deburring, automatic cleaning, a minimum of handling, etc. Often a study will be made of suppliers providing attachments for the screw machine which might accelerate the work.

These steps were, in fact, carried out in connection with this part. The manufacturing cost--material, labor, and overhead--were 8¢ each.

The Approach of the Value Engineering and Analysis System

What is the function which the part must perform?



There are two functions--to hold, and to space.

By comparison, what is the appropriate cost (value) for the holding function? what is the appropriate cost (value) for the spacing function?

Value is now determined for each function separately by comparison. The holding function could be reliably accomplished by a steel screw, for example which costs 1/2¢. Therefore, the value of the holding function is not over . . . . . 1/2¢

The spacing function could in general be accomplished by a cut-off length of tubing or a rolled spacer which would cost about . . . . . 1/4¢

Adding, we have a value for the two functions of . . . . . .3/4¢

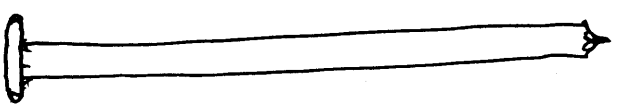
Our work from now on is directed in several respects:

1. We will not expend time developing the details of any approach which will not accomplish this entire function for in the order of 1¢.

2. We will overcome sufficient lacks of idea, of information, of appropriate design concept so that we will provide a material, design, and product which will accomplish the functions reliably and in this area of cost.

But, how do we get started?

We know we cannot use the screw machine approach because we must arrive at costs approximately 1/10 of those which would result. Help in getting started is sought from every source. Much help is found in the specific value analysis techniques. The one which formed a mechanism for this item was..."Blast--Create--Refine." Thinking started with an eight-penny nail which was approximately the appropriate size, contained a head and cost 1/10¢.



Creating and refining, the answers are developed to the question...

What must be done to the nail so that it will accomplish both functions reliably and what will be the added cost of each added operation?

The head must be moved down slightly on the shank, it must be made hex, another head must be made in the middle of the nail to provide the necessary spacing action, then threads must be rolled on each end of the modified nail. Suppliers in this type of business said they could do it and, in fact, did so--the cost becoming .8¢.

The result--because the value engineering technique of "evaluate the function in dollars" before starting any type of work upon it was employed and because other appropriate techniques were employed to produce the necessary new ideas and approaches, the functions were reliably secured for their value which was 1/10 of the cost which resulted in the absence of the original function evaluation.

In conclusion, one key technique in the value analysis and engineering system, and which is a contribution of these techniques to technology, is this preliminary EVALUATION OF FUNCTION.

Some of our members will recall a military example in connection with one of the first jobs in which the Bureau of Ships used value engineering techniques--a procurement of 1000 landing craft. One of the items of cost was the special specification, specially fabricated steel tank for containing 200 gallons of gasoline which was quoted at $520 each--$520,000 for the procurement. The Bureau of Ships value engineers evaluated this function by comparison to four 50-gallon drums costing $28. Now, with this approximate value in mind, which did not include the necessary characteristic of resisting certain environmental conditions, they secured suggestions and quotations for providing the environmental treatment and coatings to the tanks. The result was that the function of containing the gasoline was provided for $80 and, because this approach was used, the taxpayers paid only $80,000 instead of $520,000 for the function on that one procurement.

For the moment, a final statement might be made. If there is no evaluation of a function, in terms of dollars, by meaningful comparison; then a significant strength of the technology of value analysis or value engineering has not been used.