

VI. COST REDUCTION THROUGH METHODS IMPROVEMENT

1. Standard Cost System

1.1. It has been recognised that cost reduction may be realised through methods improvement. Cost control and analysis can be helpful in guiding the intelligent application of methods improvement to many of the really important cost problems. Since cost control and analysis may be regarded as important to methods improvement it may be advisable to touch upon the major features of the standard cost system to indicate its usefulness to methods improvement.

1.2. The standard cost system is essentially a system of predetermined costs based upon carefully engineered basic standards. These basic standards are subsequently evaluated at standard prices, and reflect the optimum usage of the quantities of men, machines and materials required in the manufacture of a unit of product in a given amount of time, under prostrated conditions and standard operating methods.

1.3. This system or method fixes responsibility for cost performance in each segment of the operations, by each element of expense (such as materials, labour, repair and maintenance, tools and supplies, fuels and utilities, services, and various items of fixed and overhead expense).

1.4. Use of predetermined costs by product and operating unit responsibility permits forehanded budgeting and control, and also "flags" differences between standard and actual costs (variances) thereby promoting management by exception. Also, the detailed construction of the standards permits determination of the cause of unfavorable cost results.

1.5. The costing system is constructed upon sales forecasts of normal volume and normal mix of product. This feature eliminates the undesirable influence of mix and volume from the measurement of true operating performance. However, separate measures of the cost impact of actual departures from expected "normal" volume and mix are provided.

1.6. Recognition of fixed and variable expense is established so as to provide proper treatment of their dissimilar behaviors at varying levels of activity.

2. Methods Improvement Based on Cost System

2.1. The standard cost system provides the following vital information for methods improvement:

- (i) Knowledge of where cost performance is poor, and in what amount compared to standard performance.
- (ii) Knowledge as to who is responsible.
- (iii) Knowledge as to why costs are unsatisfactory, determination of which leads to.
- (iv) How costs may be improved.

2.2. This is the kind of information needed to facilitate the best application and Use of methods improvement activities. It points out where improvement is needed, and evaluates the relative need to improve, thus singling out important things for first attention. Also, since the cost system can be used to determine the absolute amount of cost involved in any element of cost, it identifies the more fertile fields wherein the greatest potential for improvement exists. It is clear that analysis of such cost information will develop the attitude of problem awareness in the management group. Once this attitude has been developed, attention can be directed to the utilisation of a management tool that greatly assists the attention of cost reduction.

2.3. Methods improvement could be approached through two avenues:

- (i) Methods engineering as practiced by industrial engineers, who make full use of all techniques designed for this purpose, working in a cooperative manner with other departments such as engineering, production, and inspection maintenance.
- . (ii) Methods improvement by supervisors.

2.4. In the second approach, a substantial contribution has resulted from training supervisors in methods improvement work. The industrial engineering techniques for methods engineering studies are complex and detailed, and more appropriately fitted for use by specialised staff engineers. The training given to supervisors is the syste-

Systematic approach to solving problems of operating practices and methods. Such an approach is important, since experience has demonstrated that a systematic exploration for the "best way" is more dependable than haphazard inventiveness or cleverness.

3. Systematic Approach

3.1 What is meant by this systematic approach? It is a simple five-step

Plan to:

- (i) Select the operation for improvement.
- (ii) Get the facts by breaking down the operation into detailed steps.
- (iii) Analyse the facts by questioning every step.
- (iv) Develop a new and improved method.
- (v) Install the new method.

3.2. It should be emphasised that this systematic approach is a practical tool which any supervisor can use and apply to improve methods in his department.

4. Select

4.1. Now that the five steps of the systematic approach have been stated, let us dig into the first point-Select the operation for improvement-and see why it is important.

4.2. The use of a cost system and of cost analysis to isolate situations of unfavorable performance, and their causes, provides a proper basis for making good selections. Usually there are too many situations where cost results on individual items of expense do not meet standard performance. Obviously, however, if each of these many cases. Were tackled on an individual basis, the job would become cumbersome and get out of hand. There would be no time left for supervising operations, and staff forces, of necessity, would become unjustifiable, large, and costly.

4.3. The idea, then, is to select items of real significance - places where the total money involved indicates great potential for cost reduction, or where costs are running substantially above standard.

4.4. When selecting an area or item of expense for improvement, it must be remembered that the simple occurrence of large differences between standard and actual costs may represent a one-time fluke easily explained by unusual circumstances. A continuing trend of significantly unfavorable cost performance spotlights the imperative need for improvement.

4.5. Incidentally, it should be noted that a standard cost system and analysis of cost results provide a sound basis for testing the reasonability of both standard and actual costs on similar operations throughout the various plants, departments or operations of a company. This type of analysis where multiple, similar operations are involved may also be helpful in selecting operations for improvement.

4.6. In a like manner, the costs and sales prices attained by competition may point the way to good selection: at least the need to improve is most effectively demonstrated. Improvement here is a must, other wise the business is lost to competition, or becomes unprofitable.

4.7. The supervisor is quick to note recurring problems in his department which prevent him from realising cost results he wants and knows should be possible to attain. These problem situations can also guide the selection of operation requiring improvement.

4.8. Clearly, in any of the situations described, the proper rule is to look for the important things first. Some of the typical cases with which, unfortunately, management is confronted all too often are illustrated in Exhibit I. The main point to be stressed is the need to develop an awareness which promotes ready recognition of the methods and operating problems which are always present.

5. Facts

5.1. The next, and second, step in the systematic approach to methods improvement is to get all the facts of each problem.

5.2. The results of the analysis of the detailed cost system and of related statistics will prove helpful in determining the causes of poor performance. However, if this technique is used alone, there is a possible hazard of missing physical aspects of the operation which may bear importantly upon the problem. Accordingly, to get all facts, it will be necessary to break down the operation.

5.3. Just what is meant by a breakdown of the operation? A breakdown is simply a step-by-step listing in sequence of each task performed in the operation. Now we can ask ourselves, "why is this necessary? Why not just go ahead and try to work out a better way after looking the operation over?" The answer is that men have always found it necessary to get the fact first, in order to improve old ways. A detailed breakdown does these things:

- (i) It ensures getting all the facts on the present method.
- (ii) It helps analyse the job in proper sequence from beginning to end-in the order in which it actually happens.

(iii) It helps you to examine the operation one step or one part at a time.

5.4. This is the kind of help most people need. The way to solve problems is one step at a time, and to ensure seeing the whole problem, not just part of it.

5.5. The methods improvement worksheet, shown as Exhibit II, is an example of a simple form of breakdown of a typical operation.

5.6. To ensure satisfactory results, it must be stressed that the method used in making the breakdown is to-

- (i) Observe the operation on the job;
- (ii) Make a brief statement of each step;
- (iii) List all steps in sequence; and
- (iv) Indicate what is done, where it is done, when it is done, and who does it.

5.7. The main pitfall in making a breakdown is not to get enough facts. The breakdown may be too skimpy. Steps may be omitted. It should be noted how the second column in the methods improvement worksheet can be used to identify and emphasise pertinent facts such as distances, time, working conditions, hazards, excessive walking, and number of men.

6. Analysis

6.1. The next step in the systematic approach is to "analyse the facts." By this we mean "to question each step" shown in the breakdown.

6.2. The first question to be asked is, "Why is the operation as a whole necessary?" This is the "big why" and should be asked before the steps are questioned. If it is determined that the operation is necessary, then "why is it necessary?" should be asked about each step. Does the step have any purpose at all? It is necessary to distinguish step:> that are needed from those that are unnecessary or doubtful. The question "why" provides information that sometimes leads to elimination of steps, and consequently improved methods.

6.3. The next questions that should be asked when analysing the facts are-"where should it be done?" and "when should it be done" The answers to these questions taken together often lead to combining steps. A good deal of imagination is sometimes required to see the possibilities of changing the place or sequence. A sketch of the operation together with the breakdown listing the sequence of the steps is particularly hopeful in many cases for gaining a clearer picture of the place and time problem. Once the operation is thoroughly understood it

is very probable that it can be improved by changing the location or sequence thereby leading to combination.

6.4. Next, the question of "Who should do it?" should be asked. This question helps us to think about who is the most logical person to perform each step. Who else might do it because he is near by or pass the time? It has been found that one can help another by utilising idle time. In asking "Who?" thought must be given to redistribution and combination of work duties, so that manpower may be utilised more effectively.

6.5. The final questions to ask when analysing the facts are: "How this should be done? Is there a better and easier way? Have new methods been used in similar operations that would be a help here? Would redesigned or new equipment help improve the operation?" Sometimes new equipment is indicated; however, it is better to look for ideas that do not involve capital expenditure in order to make the best possible use of the equipment available.

6.6. The purpose of asking Why? Where? When? and How? is to challenge the present method, step-by-step. Thorough questioning of each and every fact will yield a worthwhile return in the form to ideas. One cannot tell beforehand which fact or which question is going to enervate the best idea. Emphasis here is on the need to approach each detail of an operation with a questioning attitude. One must be open-minded and study the facts carefully.

6.7. In the illustration of the breakdown for the operation of "Loosening Bottle Top Mold Caps," several worthwhile ideas could easily be developed by questioning each step. In effect, the questioning or analysis of each step of the operation will add to the facts on hand.

7. Develop

7.1. The next step in the systematic approach can now be taken, which is to "develop the new method."

7.2. Exhibit II lists "-Opposite the steps taken in the systematic approach-typical actions which result from questioning Why? Where? When? Who? and How? For example, elimination of procedural steps occurs with surprising frequency; in many cases, combination of actions changes in location or sequence, and reassignment of duties are found to be desirable to improve the method under study.

7.3. Only through asking these questions, and seriously seeking logical and practical answers to each, can usable ideas for new methods be generated in worthwhile quantities.

7.4. Results are not accomplished by inspiration in the usual sense, but rather by systematic stimulation of inherent creative ability. The simple operation previously illustrated after extensive questioning led to a new method, which is shown in Exhibit III.

7.5. As you will note, additional questioning was made of the improved method with the thought of making further improvements. There is no method or process as good that it cannot be improved if the will to improve it is sufficiently strong.

8. Install

8.1. The final and most important step in the systematic approach is to "install the new method". There is nothing that can be gained by any improved method until it is installed and working. Delay in the installation of improved methods will result in lost benefits that can never be regained.

8.2. Installation of a new method is not an easy process. There are many problems that must be overcome. Obviously there are new wrinkles that must be proven and worked out. There is need for good planning to make constructive action possible and to avoid problems resulting from hasty action. It may be profitable to cite a few considerations which are involved in the installation of a new method.

- (i) The proposed method must be laid out carefully so that others involved can understand what is proposed.
- (ii) It will be important to check the effects upon safety. Is the new method a safe practice?
- (iii) The question of costs must be answered. Will the new method actually reduce costs?
- (iv) Similarly, we must be confident that product quality standards have been maintained.
- (v) It will be necessary to determine the possible effects on related operations frequently, a change in one operation will require a revision of other operations.
- (vi) It is particularly important to be alert to the possible effect of the new method upon administrative matters involving rates of pay and personnel problems. Therefore, we must check the impact on wage classifications, wage incentive personnel moves, labour agreement provisions and employee attitudes. Staff assistance is very often required when the above points are checked.

8.3. It must be emphasised that employees' attitudes regarding changes deserve the utmost consideration in careful and thoughtful attention. It has been claimed that people resist change, and are prone to view new ideas with suspicion and distrust. On the whole, experience has shown that this is not true. People actually like change and new ideas. However, people do not react favorably to things that are thrust upon them. It will be important, therefore, to encourage participation and suggestions when developing an area. Most of us are inclined to accept new ideas when we are made a part of the development or application of those ideas with full understanding of all facts. The matter of attitudes is most important, and it should be stressed once again since it is so involved with the successful selling and adoption of ideas.

9. Supervisory Training

9.1 Substantial benefits could be derived from thorough training of supervisory and staff personnel in standard cost control and methods improvements. Formalized, comprehensive training arrangements are to be developed, therefore, covering these subjects. All management employees should participate in these extensive training sessions which include individual and group “work shop” development of improvements to typical case examples and problems.

9.2 Training in the use of the standard cost system develops greatly improved understanding as to what factors were influencing cost results and why. The more skilled analysis of cost data which resulted from this programmed serves as the basis for each supervisor to use in detecting trouble spots. Methods improvement training makes more effective use of supervisory “know-how” in bringing about the necessary improvement to trouble spots.

SELECT THE OPERATION TO BE IMPROVES

BOTTLENECK SITUATIONS

Does one part of the operation limit the whole? Are 'before' and 'after' operations in balance? Are materials handling facilities adequate?

EXCESSIVE DELAYS

Are certain units always breaking down? Is production held up for lack of material? Are the materials right? Can the men assigned do the job entrusted to them?

POOR MATERIAL UTILISATION

Are yields low? Could better inspection improve the quality? Are the men careless? Are the materials right? Are the factory practices right?

EXCESSIVE WALKING

Do men plan their work? Is the equipment laid out properly to minimize steps? Are materials available or is someone always hunting?

DIFFICULT WORKING CONDITIONS

Are fittings, valves and controls located properly? What about the dirt, grease, and heat? Are long rest periods necessary for the crews? Is there too much lifting?

INEFFECTIVE USE OF MANPOWER

Are the men standing around while machines are working? Are work assignments planned and scheduled properly? Do men get in each other's way?

HAZARDOUS CONDITIONS

Do your safety awareness charts point up a bad condition? Anticipate other trouble points....look and analyse so that men can work safely.

HIGH MAINTENANCE COSTS

Are certain pieces of equipment always giving trouble? Are parts wearing too fast? Are too many tools and supplies used? Is maintenance scheduled properly?

Exhibit II	
ANALYSE THE FACTS	
WHY	IS IT NECESSARY? Should it be done at all? WHY?
WHERE	SHOULD IT BE DONE? Should it be done here or somewhere else? WHY?
WHEN	SHOULD IT BE DONE? Should it be done now, sooner or later? WHY?
WHO	SHOULD DO IT? Should these persons or others do it? Are others available? WHY?
HOW	SHOULD IT BE DONE? Should it be done as at present or in another way? WHY?
	ELIMINATE
	COMBINE
	CHANGE PLACE
	CHANGE SEQUENCE
	REASSIGN DUTIES
	SIMPLIFY

