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Cost Accounting

John R. Wildman

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Cost Accounting

By JOHN R. WILDMAN, M.C.S., C.P.A.

PART IV

CHAPTER VII

Labor—Concluded

In connection with the use of the above forms, and labor in general, calculating machines and mechanical devices of all kinds are invaluable in making extensions and checking same where by employees or foremen.

No matter what form of individual record is used, the information therefrom should always be summarized, on the labor reports, so as to show, first, by departments, and second, by a subsequent summary of these, for the entire plant,—

1. The amount of the pay roll;
2. The liability to each operative;
3. The distribution of labor.

The latter information should be so arranged that the total amount applicable to each job may be seen at a glance.

The summary serves two purposes; first, that of supplying the pay roll figures to the accounting department; second, the distribution of the labor to the cost department. A specimen labor report is given on page 268.

CHAPTER VIII

Overhead

In connection with this topic, the question may well be asked, what is meant by overhead?

The term in itself is somewhat difficult to define, but it should convey to the mind the idea of indirect expenses, or everything above prime cost; the expense of operating the business, not only of the plant, but the entire business; the expense, not only of manufacturing, but selling, administering, and carrying on the business in general. It is variously called "Loading," "Burden," "Indirect Expense," and (especially by English authorities) "On Cost."

Overhead divides into:

- Manufacturing;
- General.

EMPIRE HAT MANUFACTURING COMPANY

DISTRIBUTION OF LABOR—FOR THE WEEK ENDED DECEMBER 10, 1908

DEPARTMENT.	Total.	Indirect Labor.	DIRECT LABOR.						Lot No. 380.
			Lot No. 274.	Lot No. 275.	Lot No. 276.	Lot No. 277.	Lot No. 278.	Lot No. 279.	
Blowing and Forming	\$236 68	\$36 00					\$55 22	\$96 99	\$48 47
Sizing	960 85	18 00					196 43	535 28	211 14
Pinning Out and Rounding	17 60						4 58	8 62	4 40
Shaving	38 05						10 91	17 96	9 18
Stiffening	110 84	11 50					28 59	46 70	24 05
Coloring	52 51						13 97	25 90	13 04
Blocking	136 99						39 28	64 66	33 05
Squaring	24 12						6 76	11 49	5 87
Pouncing	10 86						3 27	5 02	2 57
Pressing	247 35						70 93	116 75	59 67
Finishing	885 15	27 00					207 33	458 04	192 78
Rounding	23 58						6 76	11 13	5 69
Curling	312 47						88 82	148 01	75 64
Wiring	20 40						\$1 38	5 45	4 59
Labeling	8 16						55	2 18	1 84
Binding	489 47						27 50	109 12	233 51
Trimming	497 60	48 00					27 50	100 12	200 82
Packing	112 45		\$8 51	\$7 68	\$20 45		6 32	23 79	40 59
	\$4,185 22	\$140 50	\$8 51	\$7 68	\$24 90	\$63 25	\$982 51	\$2,033 64	\$924 23

Cost Clerk posts Direct Labor only.

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Manufacturing overhead begins with indirect labor and ends at the point of shipment from the factory. General overhead begins with the point of shipment and ends at Profit and Loss Surplus.

It should be borne in mind that manufacturing overhead includes not only the miscellaneous expenses of a general nature incidental to the manufacture, but in practice usually such items as indirect labor, inward freight and cartage, and minor merchandise and supplies which are inadaptable to direct distribution.

General overhead has nothing whatever to do with the manufacturing. It covers the expenses incidental to the conduct of the business from the point where the goods have been finished and are ready to be shipped, and includes such items as selling expenses, administrative expenses, deductions from income, charges for reserves, and deductions from sales.

It has just been said of overhead that it was indirect expense. By that is meant expense which does not permit of direct distribution. It is impossible to measure the proportion of each class of expense which is applicable to each job or lot, and requires some kind of arbitrary division or basis of distribution.

In connection with a discussion of bases, the following questions are pertinent:

1. Which is the most equitable?
2. Which is the most exact?
3. Which is the most accurate?
4. Which is fairest?

It is necessary to choose some basis which deals fairly with all the work in process; one which will distribute overhead to all jobs in actual process, and avoid loading jobs which are in the factory, but not in process. A variety of bases is available from which to choose. They divide generally into five classes, namely:

1. Time;
2. Cost;
3. Percentage;
4. Production;
5. Sales.

Under the time basis there is the labor hour, the machine hour, and the overhead day. Under the cost basis there is the wage hour and prime cost.

The labor hour may be defined as the unit of time whereby

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the work of one operative is measured; in other words, it is the labor of one operative one hour.

The machine hour is the unit of time whereby the work of one machine is measured; it is also the work of one machine one hour.

The overhead day is the unit of time whereby the amount of overhead applicable to each unit of production is measured; in other words, it is the basis for determining the average number of days each job is in process.

As a concrete example, let it be supposed that in job No. 1 there are 200 units and in job No. 2, 500 units. The amount of overhead for the period to be distributed is \$2,000. Let it be assumed that job No. 1 has been in process 10 days and that job No. 2 has been in process 4 days. It will be apparent that job No. 1, consisting of 200 units in process 10 days would be equivalent to 2,000 units in process one day, and that job No. 2, consisting of 500 units in process 4 days would be equivalent to 2,000 units in process one day, or taking the work collectively, the same as if 4,000 units had been in process one day. If the amount of overhead for the period is divided by 4,000, the average length of time the units collectively have been in process, a rate of 50 cents will be obtained, which may be made the basis for distributing the overhead as between the two jobs, in accordance with the number of overhead days involved, which in this particular example happens to be 2,000 in each case. Having allocated the overhead to jobs, it is a comparatively simple operation to re-apportion it to units by dividing the overhead on each job by the number of units involved, respectively.

As stated above, under the cost basis, there is the wage hour and prime cost from which to select. Prime cost needs no discussion, except to refresh the reader's memory that it includes but two items, materials and supplies, and direct labor.

The wage hour may be defined as the unit of cost, whereby the work of an operative is measured. It is the cost of the work of one operative for one hour.

Of the other bases of distribution little needs to be said. Students of the subject of cost accounting generally, are familiar with the percentage basis, and it is only necessary to make mention of the fact that the amount of overhead applicable to each job is that proportion which the number of units in the job bears to the total number of units involved.

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In the case of the production basis the number of units involved would be the number produced, and in the case of sales the number sold.

The sales basis is not so frequently used in manufacturing concerns as it is in wholesale and retail concerns organized on a departmental basis, and where the distribution of general expense is thought to be more accurately made by using the volume of sales of the respective departments as a basis.

The bases in all cases depend upon circumstances. They will be governed many times by whether the employees are paid by the day or hour, or by the piece; they will be governed by the nature of the business. A time basis would not ordinarily be employed in cases where goods are required to be invoiced before the records are completed, or the end of the month is reached. A job printing establishment, for instance, usually does work on an estimated basis and bills the job as soon as completed, adding to the prime cost an arbitrary percentage to cover the overhead and profit.

The basis to be employed may also depend upon the facility or regularity with which the books can be closed.

While it is impossible to make any hard and fast rule as to the basis to be employed, such a division being entirely governed by circumstances, there is this to be said; the time basis is the ideal, and always preferable. No other basis should be considered if a time basis can be used. The argument in its favor is that practically all the items entering into the overhead are of such nature that they accrue over a period of time. Examples of these, which, upon analysis, will be found to bear out the above statement, are as follows:

Heat,	Traveling expenses,
Light,	Advertising,
Power,	Salaries of officers,
Direct labor,	Rent,
Salaries, manager, and clerks,	Taxes,
Depreciation of equipment,	Insurance,
Salaries of salesmen,	Interest.

Having selected the time basis, there is the choice of the labor hour, the machine hour, and the overhead day, depending upon

DISTRIBUTION OF MANUFACTURING AND GENERAL OVERHEAD—FOR THE MONTH ENDED DECEMBER 31, 1908

Lot No.	Days in Process.	Number of Dozens.	Overhead Days.	AVERAGE COST PER OVERHEAD DAY.		Total Overhead.	Manufacturing.	General.
				Manufacturing Overhead.	General Overhead.			
274	2	.....	.....	.....	.....	.....	.....	.....
275	2	.....	.....	.....	.....	.....	.....	.....
276	2	.....	.....	.....	.....	.....	.....	.....
277	2	.....	.....	.....	.....	.....	.....	.....
278	5	.....	.....	.....	.....	.....	.....	.....
279	8	.....	.....	.....	.....	.....	.....	.....
280	7	.....	.....	.....	.....	.....	.....	.....
281	2	.....	.....	.....	.....	.....	.....	.....
TOTAL	.....	.....	.....	.....	.....	.....	.....	.....

	Total Overhead.		Average Cost per Overhead Day.	
	Total Overhead Days.	Total Overhead.	Total Overhead Days.	Average Cost per Overhead Day.
Manufacturing Overhead.....
General Overhead.....
TOTAL.....

Complete the distribution from the data given in the problem.

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the payment of compensation, whether the unit be one of time or piece.

The arguments against the wage hour, prime cost and percentage bases are as follows:

It is claimed that where the wage hour is employed the burden falls on the high-priced labor, which is unjust. The skilled workman is usually more rapid, turns out more and better work, and requires less supervision. In the case of prime cost the burden falls upon the expensive material, while, as a matter of fact, the expensive product takes no longer to go through the factory than the inexpensive one. The objection to the percentage basis is that at best it is only an estimate based on past experience. It is constantly changing and should be constantly revised.

Irrespective of the basis selected, the overhead should be summarized on the overhead report in order that the cost department may make the distribution to the various jobs. A specimen report is given on page 272.

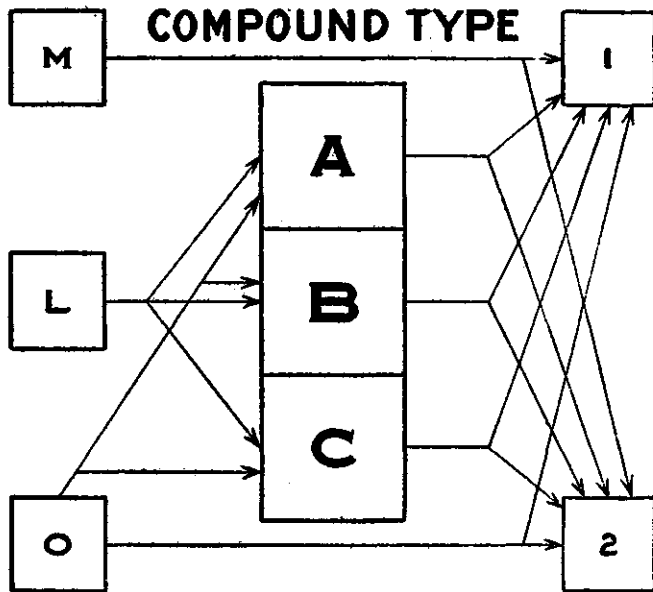
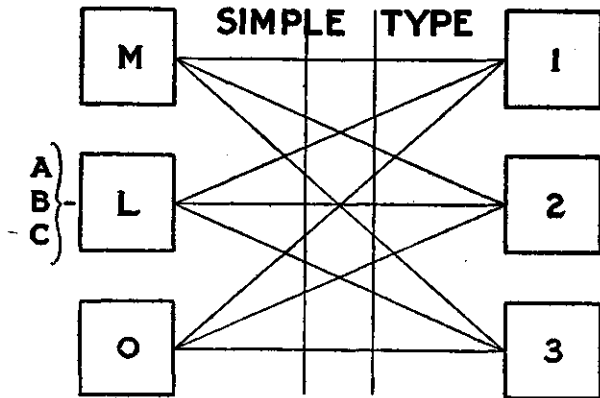
CHAPTER IX

Types of Manufacturing Cost Systems

Multiple unit production calls specifically for the manufacturing cost system. Such systems may be classified by types as simple, compound and complex. The type depends upon whether the goods are produced on special or stock order and whether the work is performed by hand or machine.

All types involve the same elements—materials and supplies, labor and overhead. The first two, in so far as their relation to the type of system is concerned, do not vary. The last named should be classified for the reason that it is comprised of items of two different kinds; those which permit of distribution to the operating departments and those which do not. A part of the overhead originates in the departments and must be applied to the product through such channels. Some of the overhead is foreign to the departments, both in its origin and application and while it must be applied to the product, it never reaches it by way of the operating departments. Overhead in its relation to the operating departments as affecting the different types of system is therefore classified as distributable and non-distributable.

In the simple type all of the three elements go through the factory, without combination, direct to the product. The word "combination" is used here as referring to the elements from an

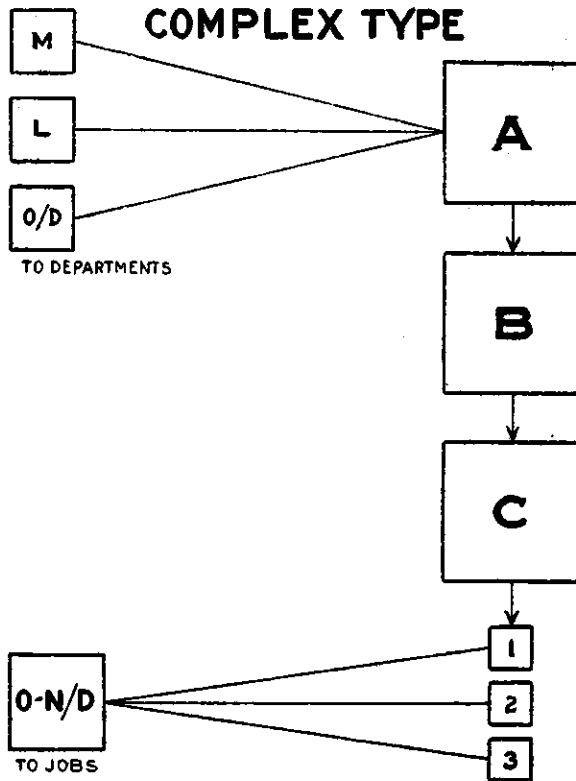


accounting standpoint rather than a physical standpoint. In the compound type, material goes direct, while the labor and distributable overhead become combined. In the complex type, ma-

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terial, labor and distributable overhead become combined, while the non-distributable goes direct.

These combinations may represent departments, processes, machines, or centers of production. There is no great distinction between "department" and "process" as used herein, except that more than one process may be included in one physical de-



partment. In the above illustrations, where an attempt is made to bring out more clearly the subject matter of the preceding paragraphs, departments are indicated by the letters—A—B—C; the elements of cost by the letters, M, L, O—D, and O, N—D; and the jobs by numbers.

Words and graphics almost fail when an attempt is made to describe briefly and clearly, or to illustrate, the complex cost

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system. It may be referred to as a group of small cost systems wherein each operating department constitutes a member. It might aid in the illustration if, in the last diagram above, one were able to imagine the departments "A—B—C" as containing within their respective limits, the diagram of the simple type sufficiently reduced in size to permit of such treatment.

In the operation of the complex system, materials and labor may be combined within a given department and carried forward, or the combination may be extended to include all of the three elements and similar treatment follows. The last named procedure is difficult of accomplishment, except where conditions have been standardized and an overhead rate can be ascertained. The difficulties in the way of success in the absence of such a rate are as follows:

1. The cost record must follow the product.
2. The distribution cannot be made until the end of the month or period.
3. The product must go forward when required for physical treatment, irrespective of the cost record.

Whether or not the rate is correct cannot be determined until the end of the period, when the actual amount of overhead for the period has been ascertained and the true rate found.

(To be continued)