

# PAYMENT BY RESULTS (INCENTIVE BONUS SCHEME)

## Introduction

The need to improve productivity in Railway workshops for ensuring better utilization of assets was being felt even prior to independence. In fact, piecework bonus system was in existence in some workshops like Jamalpur, Kanchrapara & Perambur even before independence, though the systems in workshops varied from each other. Railway board decided in 1949 to introduce some form of incentive scheme to provide direct financial incentive to workers who exceeded a certain minimum level of performance. The first formal incentive scheme was introduced in Chittaranjan Locomotive Works in December 1954 and came to be known as the CLW pattern of Incentive Scheme. The scheme was a success, and was extended to Integral Coach Factory in 1960. This type of incentive scheme was extended to repair Workshops in 1958, though the actual implementation was from 1960 after Production Control Organisation was set up in these Workshops.

The scheme was extended to the S&T Workshops and the Civil Engineering Workshops and the Electrical Engineering sections attached to the Mechanical Workshops. This incentive scheme is also known as '**the system of payment by results**'. The scheme is given in some detail in the Indian Railway Code for the Mechanical Department (Workshops). The relevant details are given in Chapter-IV, while chapter V gives the details of the 'time records and allocation of labour'.

## Salient features

- Under the incentive scheme, the basic wages of the worker are guaranteed.
- Time is the yardstick for measuring work.
- Time study is carried out as per the standard practices of work-measurement.
- Allowed time for a work is so fixed that a worker of normal ability may earn 33 $\frac{1}{3}$ % bonus over the basic wages. This time includes allowances for fatigue, general handling, gauging and production bonus allowance.
- It is expected that a normal worker would be able to complete the operation in  $\frac{3}{4}$  of the total allowed time, to be able to earn 33 $\frac{1}{3}$ % incentive bonus.
- Time saved lost on the allowed time on each operation is calculated separately for each worker. It can not be carried over to the next month.
- Ceiling for the time saved is 50% i.e., if the time saved is more than 50% only 50% would be taken into account for the purpose of working the incentive bonus.
- Supervisors up to chargemen are included in the scheme.

## Types of Workers :-

- **Direct Workers(DW)** : Those whose work can be assessed through time- studies.
- **Essentially Indirect Workers (EIW)** : Those who contribute to the continuity of the work but whose work can not be assessed through time-studies.
- **Indirect Workers(IW)** : Those who do not contribute directly or indirectly to the production. THEY DO NOT GET INCENTIVE BONUS.

## Incentive Scheme : Mechanisms

1. **Timing of operations** : A systematic comparison of the time taken for a known job is made with the allowed time, which is arrived at by careful experimentation, keeping into account the conditions of working, quality, promptness of supply services, all standardized. Time standards are fixed for individual operations and time taken is carefully recorded for individual workers to assess if the standard has been achieved or not.
2. **Time-study** :
  - Before time study is done, work-simplification must be done.
  - All elements of floor-to-floor cycle of work are observed, including both effective and ineffective elements. Ineffective elements are the times during which man, machine or both are idle.
  - Each operation is split into elements that are basic parts of the operation and consist of one or more motions regularly combined in the same sequence to establish a definite purpose. Elements could be constant (having a standard time allowance for the same set of conditions) or variable (where time allowed would change to allow for variation of work required in accordance with the dimension or the condition of setting).
  - Effective time is rated and ineffective time classified.
  - Wasteful motions and time taken thereon are not accounted for
  - Elements have clearly defined break-points.
  - Observed time for each element is normalized depending on the rating performed by the worker.
3. **Synthetic Times** : These are time standards based on the average of normalized values of element times obtained out of a series of similar studies in the past. Sufficient time studies are conducted before establishing standards values to be used for synthetic data for
  - Manipulation values.
  - Loading/unloading values
  - Setting-up values
  - Tool-changing values
  - Preparational values.
4. **Rating** :It is the assessment of the skill and effort involved in each element. Each element should be assessed independent of the previous elements. It is based on the principle that an average worker working under non-incentive conditions just to earn his basic wage, is said to be working at 60 rating (or he could be said to be producing 60 units of output per hour). The same worker, while working under incentive conditions, can work at such speed and with such effort to earn 33⅓% more, i.e., at 80 rating (or producing 80 units of output per hour). The rating is done by rate-fixers of the rate-fixing department, who are trained for this job.
5. **Normalising** :

It is carried out on the observed time for each element during the time-study, and depends on the observed rating. It is done on the principle that the worker would have to work at 80 rating to be able to earn 33⅓% incentive bonus. It is worked out as follows :

$$\text{Normalised time} = \frac{\text{Actual time} \times \text{observed rating}}{80 *}$$

- indicates the rating under incentive conditions for 33⅓ % incentive bonus.

6. **Additional Allowances:** The following allowances are added to the normalized operational time on cumulative basis.

- i) General handling & contingencies: This includes work like cleaning swarf, grinding of tools, getting spanners, procuring cutting compound etc. For this an allowance of 12½ % is given on the operating time.
- ii) Gauging on machining: Wherever gauging is necessary in machining operations, 5% is added.
- iii) Fatigue: It is understood that no worker can work continuously at a set speed. An allowance for fatigue is added. Since it would depend on the type of work, an allowance varying from 12½% to 25% is added.
- iv) Production bonus: An allowance of 33⅓ % is added as the production bonus.

7. **Allowed time:**

Allowed time is worked out by adding normalized time and additional allowances on cumulative basis. (para 409)

**Example**

Normalised time of all elements	= 1 hr		
Fatigue allowance 25% (**)	= 0.25hr	cumulative hour	= 1.25 hr
Contingencies 12½%	= 1.25 x 12.5 = 0.156 hr		1.406 hr
Bonus 33⅓ %	= 1.406 x 33⅓ % = 0.468 hr		1.87 hr
Gauging 5% (not on all jobs)	= 1.87 x 5% = 0.09 hrs		1.96 hr

Since the worker is expected to complete the operation in ¾ of the time allowed, it would be completed in 1.96 x ¾ = 1.47 hrs.

Time saved = 1.96 – 1.47 = 0.49 hrs.

Profit = 0.49/ 1.97 = 33⅓ %

1. Is there any basic difference between the systems followed for rating?

Ans - Basically all the systems of rating are aimed towards evaluating the performance of a worker although the driving parameters for different rating systems are not the same.

2. Is Incentive Scheme linked with demand of product in the market?

Ans - Incentive scheme is adopted for higher production which is obviously required when there is demand for the particular product in the market, otherwise there is no meaning in producing a product by paying incentive which do not have any demand in the market.

**Preparation time:**

Some time is allowed per batch, for receiving material, instructions, tools etc. This is called preparation time.

8. **Extra time:**

Extra time can be allowed for

- Excess machining work on castings/ forging/ bars

- Hard material
- Defects in machine for which worker is not responsible
- Change in batch quality

**Excess time card** is required to be filled by rate fixer, issued to chargeman, countersigned by Shop Superintendent. However in such cases, the request for extra time must be made by the sectional chargeman, and verified by the inspector. Only then is the excess time card issued.

**10. Time taken:**

Time taken is worked out based on job-card/ squad card (for squad working). They are punched ON & OFF on the commencement and completion of the operation, respectively.

**11. Out-turn:**

Out-turn is based on the total quantity 'passed' by the inspector for each operation. Inspector should be independent of those under the incentive scheme and should not be influenced by them.

**12. Time saved/ lost:**

It is the difference between the total time allowed and the time taken. If the time taken is less than the allowed time, time is saved. If more time is taken, it is lost. Allowed time includes;

- Time per piece multiplied by the quantity passed.
- If the rejection is on account of material, the out-turn of the rejection, will also be taken into account for the proportion of work done on the rejects. The reason, however, has to be certified by the inspector.
- Preparatory per batch.
- Extra-time as per Excess-time cards.

Where two or more workers are engaged on the same job, the time saved/ lost is apportioned in the ratio of the time taken by each.

**13. Ceiling limits or Profits:**

50% of the basic wages. Profits are worked out as time saved/ time taken.

**14. Incentive bonus to EIW & Supervisors:**

- EIW workers and supervisors have a ceiling limit of 80% of the average incentive bonus of direct workers served/ supervised.
- Mistries, however, get incentive at 100% of the average incentive of the direct workers supervised.
- If a supervisor also supervises non-incentive direct workers, bonus is given in the ratio of direct workers under incentive to the total direct workers supervised.
- Shop superintendant sends information regarding DW, EIW and supervisors by the 2<sup>nd</sup> of the following month. Separate statements are sent in respect of each supervisor, listing the direct workers supervised.

**15. Payment of incentive bonus to Direct Workers:**

It is based on the net time saved. Time saved/ time lost is calculated for each operation separately, and the ceiling of 50% applied to each time saved. Net time so arrived at is multiplied by the prescribed hourly rate of the category to arrive at the incentive bonus. It is paid monthly with the salary bill.

**16. Payment of Incentive Bonus to Essentially Indirect Workers and supervisors :-**

They are paid 80% of the average bonus of the section. A concept of standard hours per month is introduced for the purpose of calculations.

Standard hours =  $\frac{\text{GA hrs. actually worked by DWs during the preceding 6/12 month}}{\text{Scheduled hrs. that DWs should have worked in the same period}} \times 208$

Standard hours remain fixed for the ensuing 6 months/12 months after which they are again calculated.

Average percentage of profits of direct workers of each section is calculated as :

Section percentage =  $\frac{\text{Total net time saved by the section}}{\text{Standard hours} \times \text{no. of direct workers in the section}} \times 100$

Leave reserves are included in the total number of direct workers.

Accordingly the Incentive bonus payment is calculated as

Incentive payment =  $\frac{\text{Section \%}}{100} \times \frac{80}{100} \times \text{No. of GA card hours} \times \text{hourly rate}$

For chargemen also, the same formula is applied. However, for mistries, 100% is applied instead of 80%.

In case there are non-incentive direct workers also under the same supervisor, the incentive bonus is multiplied by the ratio of direct workers under incentive to the total direct workers supervised.

17. **Idle time** : Idle time is the time taken up in delays and hold ups for which worker is not responsible. These are normally for :

- no power
- machine repair
- lack of material
- lack of tools
- waiting for work
- crane under repair
- miscellaneous

18. **Deductions from supervisors for idle time** : If there is idle time on account of lack of work or lack of tools, supervisors directly responsible, hence there is a deduction to be made from the incentive bonus of the supervisors as per the following scale

<b>Idle time on account of lack of work/lack of tools</b>	<b>Deductions</b>
2 % or above but less than 5%	10%
5% or above but less than 15%	20%
15% or above	No bonus

19. **Incentive to staff in Service shops** :- Millwright and Tool & Template shops. Those sections where work is measurable, the same system is followed which is there for other direct workers under incentive. For those whose work can not be measured, the following system is followed :

- The staff is segregated into groups, and attached to specific shops or sections
- For each maintenance gang, work register must be maintained for the work done in each shift, in which the time of start and completion is recorded. This is countersigned by the chargeman every day.
- Gang strength is fixed based on workload/activity of the shop.

- Absenteeism from the gang is recouped from the general pool if requested by the leading hand.
- A monthly target fixed for breakdown of machines leading to idle time. This is to be kept at a minimum. If the idle time on account of breakdown of machines is more than this target. NO BONUS IS PAYABLE TO MAINTENANCE GANGS.
- For the purpose of calculation of incentive bonus, they are treated just like the EIW attached to the DWs of the section/shop.

### **CHECKS AND BALANCES**

1. 10 – 20% of excess time in manufacturing shops and 2 – 5% of inspection cum computation sheets are to be personally checked by PE/ APE.
2. The reason for issue of plus-cards (excess-time cards) are to be investigated and corrective measures taken.
3. Job-cards/squad cards are to be kept in the custody of time-both clerk. They are taken from the clerk for punching the time (ON or OFF) and returned.
4. All completed job-cards are to be sent to the Incentive Bonus section within 48 hours of completion of job.
5. Inspector is to record the quantity 'passed' for each operation on the job-cards under his dated signatures.
6. Allowed times have to be approved by the PE. They have to be printed on job-cards. In case they are hand-written, they have to be countersigned by the PE/ APE. If the computer prints them, suitable security measures have to be there to prevent tampering of data. If any timesaving methods are introduced, or an improved machine-tool is installed, the allowed timings have to be revised.
7. Time lost is adjusted against the time saved during the same month after applying ceiling to each of the time saved. Completed job-cards of one wage-period must be included in the same month's bill.
8. Abnormal profits: When high profits (>50%) are consistently earned or are earned by a majority of workers, causes have to be analysed and anomalies rectified. 9)
9. Losses: It is expected that the average worker will complete his job in  $\frac{3}{4}$  of the allowed time and earn 33-1/3% bonus. Where consistent losses (however small) are made, or losses are made by a majority of workers, detailed investigations need to be made, as the inducement offered by the incentive scheme has ceased to exist.
10. Overtime: Ordinarily there should be no overtime booked in the sections under incentive scheme.
11. **Apprentices:** Apprentices are not eligible for incentive scheme.
12. **Idle-time:**
  - All idle-time to be investigated to prevent wastage.
  - Idle-time cards are to be in the custody of time-booth clerk, which are allowed to be punched based on idle-time slips issued by chargeman.
  - Upto 15 minutes of idle-time may be booked against the job-card itself and not as idle-time.
13. **Checking of job-cards:** The job cards received in the Incentive Section of the Accounts office are checked to see that:
  - They have been inspected and signed with date by the shop inspector for the quantity passed.
  - All corrections in the pre-printed job-cards bear the signatures of the shop rate fixer under his designation.
  - Total of 'time taken' as struck on the cards tallies with details on the job-cards.
  - 'Total allowed time' will be worked out on the basis of the 'passed' out-turn. The AT appearing on the job-card should be checked with that approved by the PE by comparing with the Master Planning Card (which should be sent to the office of W.A.O.). This is to be done as a percentage post-check so that all the ATs are checked in rotation.
  - Time – saved limit of 50% is not exceeded, and time lost is also accounted for.
  - Hand written job-cards are certified by the APE/ PE.

- Excess-time card is attached wherever indicated, with signatures of rate-fixer, and the SS.
- Excess time card is attached wherever indicated, with signature of rate fixer and the SSE.
- DWs, EIWs and the supervisors in whose favour the incentive bonus has been billed do not exceed the sanctioned strength.
- Idle time penalties are imposed in supervisors' bonus.
- Supervisors get incentive in the ratio of the DWs under incentive, under their charge.
- Idle time cards are to be checked by WM/ AWM within 24 hrs of being punched in.
- Job cards are supported by suspension and resumption slips wherever required. Suspended job cards are to be checked by the officer in charge.

**NB**

Normally no swapping of day workers and incentive workers should be done except in very special circumstances.

**FORMS AND FORMATS**

**Time books (W.502) :-** These are used for service shops not under the incentive scheme. Time books are maintained by the section supervisor and posted daily in the Time sheet by the time booth clerk. They contain the details of the time spent by each direct worker, work order number and the ticket number of the worker. Normally two books are maintained; one for odd days and the other for even days. This facilitates posting by the time booth clerk, without postponing entry in the time books.

**Time sheets (W.504) :-** These are also for service shops and are maintained by the time booth clerk from the time books (W.502). They are made one for each direct worker for each month, and show the time for which wages are earned by a worker spread over different work orders.

**Job cards (W.506) :-** Job cards are used for incentive shops. They show the allowed time, preparation time, details of the operation, work order number, batch number, quantity and the time worked by the workman on individual operations.

They are printed by the PCO for each operation in the route card. They contain record of items inspected and passed also.

**Job cards for squad work (W.507) :-** This is similar to the job card except, the job requires squad working. The leading hand is given one squad – summary card and separate job cards for each member of his gang.

**Squad summary card (W.508) :-** This is given to the leading hand and is punched by him. The job cards of the squad are also attached to this card when the job is over.

**Idle time card (W.509A) :-**

Prepared for each workman for each month.

Kept in the custody of time booth clerk.

Punched on the authority of idle time slips.

When Idle time card is punched ON, job card is punched OFF and vice versa.