Asset Utilization Statistics

Wagon Turn Round is the time interval between two successive loadings. It is normally expressed in number of days. It is the time taken by a wagon to go through one complete cycle of loading, movement to destination, unloading and next loading. A drop in wagon turn round without a corresponding drop in lead is a healthy sign indicating better wagon mobility.

In order to calculate WTR on a divisional basis, where many a times only part of the wagon cycle gets completed, the following formula is used.

T = B / (L+R)

Where

T = Wagon Turn round (in days);

B = Number of effective wagons held at odd hours;

L = Loading for the day in number of wagons and

R = Number of loaded wagons received during the day.

Wagon KM per wagon day is a measure of wagon mobility and indicates the average number of kilometers moved by a wagon per day, both loaded and empties run included. A drop in this index indicates wagons are not smoothly moving and there is a hold up. The time spent under maintenance by a wagon is not included while working out this index. However any other idling when on line will bring down the figure.

As an example, for a freight train that ran 1000 kms in 36 hours,

WKM per wagon day = 1000/36 x 24 = 667 kms/day.

EKM – Engine Kilometer is the distance traveled by an engine in a day. It includes train kms hauled by the engine as well as distance travelled by the engine as 'light engine'. It also includes 'shunting kms' to include work done by the engine for shunting in a station calculated as a thumb rule of 15 km per hour. This statistics is daily and periodically monitored for ensuring that locos are not kept unwarrantedly idle and they are put to maximum use. EKM for a division is calculated by the formula…

EKM = Total Engine kilometers earned in a day / Outage

Coach KM per coach day - This unit of measure gives an idea of how efficiently the coaching stock is being utilized. When same numbers of coaching trains are run with lesser number of coaches, coach kilometer per coach day improves. The rake links are reviewed to maximize coach kilometer per coach day. This is worked out in lines of WKM per wagon day.

Crew Kilometer Run is the number of kms worked by a crew. The higher the km, the better is the utilization of the crew. Some short lead movements which are significant for train operations are given benefit of additional kms (pilot kms) in order not to disincentivize the crew engaged in such critical operations.

Line Capacity Utilization is the percentage of actual number of trains run in a section as compared to the designed line capacity. It gives an indication on level of congestion in order to identify, propose and execute works to improve the designed line capacity. As infrastructure works take time and cost for execution, quite often busy sections face with the challenge of accommodating more number of trains as well as ensuring maintenance blocks. In these sections, any improvement in either of the aspects will lead to improved line capacity utilization. Running long haul trains, reducing ineffective block time, improving block output, and integrated blocks are few such measures.

Average Gross Train Load (in tonnes) - This figure is the average overall load of a goods train i.e. the freight load plus the weight of the rolling stock.

Average Gross Train Load = GTKM / Total train kms.

This statistics gives an idea of the load required to be hauled and hence significant in planning for adequate tractive effort; the most economic or the best for seamless operations etc.

Many more indices are measured depending on the need to understand the train operations better, thereby contributing to better decision making. These can either be directly collected or derived through various formulae using two or more sets of data. With the implementation of IT in many areas of train running like FOIS, ICMS, TMS, Data logger etc., Indian Railways now has ‘big data’. Web reports in required format can be sought from CRIS, New Delhi for deciding on any specific matter. Analyzing these big data based on traditional indices and improved indices will go a long way in improving the efficiency of train operations.

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