



REPLACEMENT OF ASSET THROUGH SINKING FUND

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ABSTRACT :

When a fixed asset such as plant, machinery, furniture, motor vehicle, etc; becomes obsolete over a period of time due to depreciation, then such assets need to be replaced with new asset. Sometimes the asset/ lease become expired over a period of time and needs to be purchased/ renewed. In order to purchase a new asset or renew a new lease the company has to pay huge amount from its profits and therefore a large sum of money will be debited from the bank balance of the company and this will cause liquidity problems to the company. In such a situation the management of the company has to make a smart move in order to replace such obsolete assets. It needs to create a Sinking Fund (which is also known as Depreciation Fund Account)



KEYWORDS : cost-effective manufacturing process , newspaper articles, varied websites.

INTRODUCTION:

Depreciation is a permanent, continuing and gradual shrinkage in the book value of fixed asset. Therefore, the depreciation is charged to the fixed assets such as plant, machinery, buildings, motor vehicle, etc. However, current assets are not depreciated rather these are valued. Depreciation is charged on the book value of the asset. The value of the asset is shown in the balance sheet after making appropriate depreciation. The rate of depreciation is prescribed as per the Indian Companies Act, 2013/ any other Act of the country or it is calculated as follows:

$$\text{Depreciation} = \frac{\text{Cost of Asset} - \text{Scrap Value}}{\text{Estimated Life of the Asset}}$$

Depreciation is charged to an asset permanently. Once the depreciation is charged it will reduce the value of the asset. Depreciation is charged regularly (i.e. every year) on the book value of the asset. There should not be any abrupt changes in the value of the fixed assets due to charging of depreciation. Therefore, depreciation must reduce the value of asset slowly and steadily. Depreciation is a 'loss' because the value of an asset is reduced regardless the usage of an asset. Therefore, such loss is debited to profit & loss account.

The Institute of Chartered Accountants of India defines the depreciation as "¹a measure of the wearing out, consumption or other loss of a value of a depreciable asset arising from use, affluxion of time or obsolescence through technology and market changes. Depreciation is allocated so as to charge a fair

¹ S.P Jain & K.L. Narang

proportion of the depreciable amount in each accounting period during the expected useful life of asset. Depreciation includes amortization of asset whose useful life is predetermined"

According to International Accounting Standard Committee "²*depreciation is an allocation of the depreciable amount of an asset over its estimate useful life. Depreciation for the accounting period is charged to income either directly or indirectly"*

CAUSES OF DEPRECIATION

1. **Wear and tear due to constant use:** When an asset is used constantly and when such asset is in use and form rust, erosion, decay and rot from being exposed to rain, sun, wind and other elements of nature. Example: Cabs/ cars which are used consistently and exposed to elements of nature
2. **Obsolescence:** Obsolescence means the process of becoming outdated or obsolete. Old machinery though in good physical condition becomes outdated by introduction of new model which produces more than the old machinery. Example: Nokia phones which have dominated the world have become obsolete or outdated due introduction of smart phones
3. **Efflux or passing of time:** Some assets have fixed period of legal life. Example: patent, trademarks, copy rights and lease. For instance lease can be entered for any number of years and it can renew later on after the completion of the lease.
4. **Exhaustion:** Due to constant use of the asset, the asset become tired or exhausted over a period of time and therefore will not be productive after a period of time and therefore it sold as scrap after few years. For example, continuous usage of electronic gadgets like mobile phones, computers, etc.
5. **Accident:** An asset reduces its value due to accident

OBJECTIVE FOR PROVIDING DEPRECIATION

- To know to correct profit and loss of a business
- To show the fixed assets in the balance sheet at proper values
- To make the provision for replacement of asset

Basic factor or basis for providing depreciation

Depreciation is provided on the original cost of asset at given rate or value of depreciation. The depreciation is based on estimated life of the asset. It means the depreciation is provided on working nature of the asset based on the previous experience of the production manager in a factory. That is estimation is made by the production manager that an asset will work for 'n' number of years due to its wear and tear use. However, the estimation for residual or scrape value of the asset is made at the purchase of the asset, so that the management of the company can take a decision for the replacement of the asset.

Methods of providing the depreciation

Now, we will know the various methods of providing the depreciation

1. **Fixed installment method or Fixed percentage on original cost or Equal installment method or Straight line method :** Under this method a fixed percentage on original cost of the asset is written off every year so as to reduce the asset account to 'Nil' or its scrap value at the end of the estimated life of the asset

Formula:
$$\text{Depreciation} = \frac{\text{Cost}-\text{Estimated scrap value}}{\text{Estimated life of the asset}}$$

For example the cost of machinery is Rs.1,00,000 and scrap value is Rs.10,000 and estimated working life is 10 years. Therefore the value of the depreciation is

² S.P Jain & K.L. Narang

$$\frac{1,00,000-10,000}{10} = \text{Rs. } 9,000/=$$

2. **Reducing installment method or Diminishing Balance method or Written down method:** Depreciation is charged at the fixed rate on the reducing balance of the asset every year. Every year the depreciation charge will get reduced because depreciation is calculated on the opening balance of the asset

3. **Annuity Method:** Under this method, the amount paid for the purchase of an asset is regarded as an investment. Every year asset account is debited with the amount of interest and credited with amount of depreciation. The interest is calculated on the debit balance of the asset at the beginning of the year and depreciation is calculated on the basis of annuity table.

4. **Sum of the digit method:** Under this method depreciation is written off each year by the following formula

$$\text{Depreciation} = \frac{\text{Remaining life of the asset (including the current year)} \times \text{Cost of asset}}{\text{Sum of the digit of the life of the asset in years}}$$

In this year the first year get the highest weight and second year gets lesser weight than the first and so on....

For example: The cost of machinery is Rs.45,000 and the life of the asset is 5 years, depreciation under sum of the digits is calculated as follows:

Cost of asset = Rs.45,000.

Sum of the digit of the life of the asset in years=1+2+3+4+5= 15

1st year depreciation = $\frac{\text{Remaining life of the asset (including the current year)} \times \text{Cost of asset}}{\text{Sum of the digit of the life of the asset in years}}$

$$= \frac{5}{15} \times 45,000 = \text{Rs.}15,000$$

$$2^{\text{nd}} \text{ year depreciation} = \frac{4}{15} \times 45,000 = \text{Rs.}12,000$$

$$3^{\text{rd}} \text{ year depreciation} = \frac{3}{15} \times 45,000 = \text{Rs.}9,000$$

$$4^{\text{th}} \text{ year depreciation} = \frac{2}{15} \times 45,000 = \text{Rs.}6,000$$

$$5^{\text{th}} \text{ year depreciation} = \frac{1}{15} \times 45,000 = \text{Rs.}3,000$$

5. **Revaluation Method:** Under this method the asset are revalued at the end of the accounting year and this value is compared with the asset at the beginning of the year. Difference between opening and closing balance is treated as depreciation. When the asset is purchased during the year, then the asset is valued at the start of the period; the addition of such asset will increase the value of the asset during the year and the asset is revalued at the end of the year. The amount of decrease in the value of the asset shows the amount at which the asset is depreciated. Examples: Bottles, Corks, Loose Tools, Live Stock, etc. are depreciated on the bases of revaluation method.

6. Depletion Method: This method is used mostly in case of mines, quarries, etc.; from which a certain quantity of output is estimated. The value of mine depends upon the quantity of minerals that can be obtained. When the entire quantity is extracted, the mine loses its value. The rate of depreciation is worked per ton. Therefore, the rate of depreciation under this method is as follow:

$$\text{Rate of Depreciation} = \frac{\text{Cost of Mine}}{\text{Estimated quantity to be raised}}$$

7. Machine Hour Rate Method: Under this method the life of the machine is fixed in terms of hours. Hourly rate of depreciation is worked out by dividing the cost of the machine by the total number of hours for which the machine is expected to be used. Depreciation to be written off in a year is ascertained by multiplying the hourly rate of depreciation by the number of hours the machine actually runs in a year. Therefore the depreciation is calculated as follows:

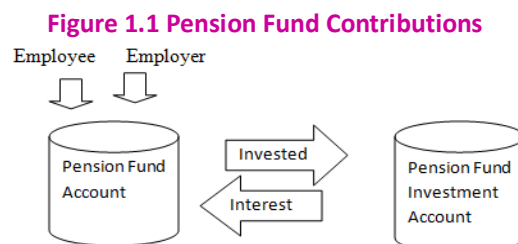
$$\text{Depreciation} = \frac{\text{Cost of Machine}}{\text{Number of Machine hours worked}}$$

8. Insurance Policy Method: This is one of the asset replacement methods by the company. The company purchases the insurance policy for number of year's equivalent to obsolete value of the asset. The company pays the premium at the beginning of the year. Even the asset get destroyed during the year, the company can realize full amount from Insurance Company and can replace the asset. For this purpose the company creates Depreciation Reserve Account. Once the Depreciation Reserve Account is created, the amount of depreciation is not made from the respective asset from the balance sheet. An amount equivalent to premium is created from profit & loss account and transferred to Depreciation Reserve Account. At the end of the first year the company purchases the policy which is equivalent to the depreciation amount and it this amount which is further renewed for subsequent years till that year the asset gets obsolete.

The amount of premium equivalent to the depreciation is purchased and an account known as Depreciation Insurance Policy is created and showed in the asset side of the balance sheet till this Insurance policy is surrender to the Insurance Company and new asset is purchased. The profit or loss on account of renewal of insurance policy is transferred to Depreciation Reserve Account.

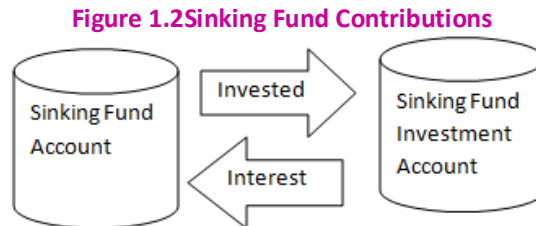
The asset account will be closed and finally the asset is sold for scrap value and profit or loss on sale of asset is transferred to Depreciation Reserve Account. Finally, the Depreciation Reserve Account is closed any debit balance of such account will be transferred to profit and loss account and if any credit balance is transferred to Reserve Account in liability side of balance sheet.

9. Sinking/ Depreciation Fund Method: This method is similar to Insurance Policy Method. This is usually based on the basis of Pension Fund (PF) account which is demonstrated in the below figure1.1



The above figure 1.1 shows that when the employee contributes some amount from his/her salary to PF account, then the employer will also contribute the same amount in the PF month on month and year on year. For example an employee contributes Rs.2,000 in pension fund and same amount is also contribute

to PF by the employer. Therefore a sum of Rs.4,000(i.e. Rs.2000 contribution by employee and Rs.2000 by the employer) is contributed in PF account every month. Since this account is maintained by the Government of India, the government will deposit such amount in stock market especially in government securities so that the PF money will generate some interest. This interest belongs to PF and therefore this interest is transferred to PF account year on year. When the employee takes superannuation or retirement the amount of contribution made by him/her is given back to the employee by the employer including the interest. Likewise sinking fund also works in the same manner. This is explained below figure 1.2



The company in order to replace the assets it creates sinking fund account which is equivalent to depreciation value (such depreciation value is derived as per sinking fund table). At the same time the company purchases the investment which is equivalent to the depreciation in Government securities. Any interest accrued on such investment is transferred to sinking fund account. Such interest is added to sinking fund account and from the next year onwards investment is made with the amount of depreciation plus the interest earned during the previous year.

After the estimated life of the asset, the asset is sold for a scrap value and any profit or loss made is transferred to sinking fund account. At the same time sinking fund investment account is closed by selling the investment and any balance thereof is transferred to sinking fund account. Finally, sinking fund account is closed and balance there on transferred to profit and loss account in case of loss or reserve account in case of profit.

Let us take an illustration

A company purchased a 3 year lease on January 1st 2015 for Rs.50,000. It is decided to provide for the replacement of lease at the end of 3 years by setting up a depreciation fund. It is expected that the investment will fetch interest at 5%. Sinking fund tables show that to provide the requisite sum at 5% at the end of 3 years an investment at Rs. 7,932.22 is required every year. Investment made to the nearest rupee. On 31st December, 2017 the investments were sold for Rs.15,000. On 1st January, 2018, the same lease was reviewed for a further period of 3 years by payment of Rs.60,000

Show the journal entries and give the Lease Account, Depreciation Fund Account, Depreciation Fund Investment Account and the New Lease Account.

Solution

Journal Entries

Date	Particulars	JF No.	Dr. (Rs)	Cr. (Rs)
2015 Jan 1	Lease A/c Dr To Bank A/c (Being lease purchased)		50,000	50,000
31 st Dec	Depreciation A/c Dr To Depreciation Fund A/c (Being annual depreciation made)		7922.22	7922.22
31 st Dec	Depreciation Fund Investment A/c Dr To Bank A/c		7922	7922

	(Being investment purchased)			
31 st Dec	P&L A/c Dr To Depreciation A/c (Being amount of depreciation transferred to P&L A/c)		7922.22	7922.22
2016 Jan 1 st	Bank A/c Dr To Depreciation Fund A/c (Being interest on investment transferred to Depreciation Fund A/c (7922*5%))		397	397
31 st Dec	Depreciation A/c Dr To Depreciation Fund A/c (Being annual depreciation made)		7922.22	7922.22
31 st Dec	Depreciation Fund Investment A/c Dr To Bank A/c (Being amount of depreciation 7922 and interest 397 is invested)		8329	8329
31 st Dec	P&L A/c Dr To Depreciation (Being amount of depreciation transferred to P&L A/c)		7922.22	7922.22
2017 Jan 1 st	Bank A/c Dr To Depreciation Fund A/c (Being interest on investment received)		813	813
31 st Dec	Depreciation A/c Dr To Depreciation A/c (Being annual depreciation made)		7922.22	7922.22
31 st Dec	Bank A/c Dr To Depreciation Fund Investment A/c (Being investment sold)		15000	15000
31 st Dec	Depreciation Fund A/c Dr To Depreciation Fund Investment A/c (Being loss on sale on investment transferred to Depreciation Fund A/c (Refer working Notes No.2))		1261	1,261
31 st	Depreciation Fund A/c Dr To Lease A/c (Being amount on lease written off transferred to Depreciation Fund A/c)		50000	50000
31 st Dec	P&L A/c Dr To Sinking fund A/c (Being loss on sinking fund transferred to P&L A/c-Refer Working Notes 3)		26255	26255
2018 Jan 1 st	New Lease A/c Dr To Bank A/c (Being new lease purchased)		60000	60000

Working Notes

1. Lease Account

2015 Jan 1	To Bank	Rs <u>50,000</u>	2015 Dec 31	By balance b/d	Rs <u>50,000</u>
2016 Jan 1	To balance b/d	<u>50,000</u>	2016 Dec 31	By balance b/d	<u>50,000</u>
2017 Jan 1	By balance b/d	<u>50,000</u>	2017 Dec 31	By Depreciation Fund A/c	<u>50,000</u>

2. Depreciation Fund Investment Account

2015 Dec 31	To Bank	Rs <u>7932</u>	2015 Dec 31	By Balance c/d	Rs <u>7932</u>
2016 Jan 1	To balance b/d	7932	2016 Dec 31	By balance c/d	16,261
	To Bank	<u>8329</u>			
		<u>16,261</u>			<u>16,261</u>
2017 Jan 1	To balance c/d	16,261	2016 Dec 31	By bank	15,000
			2016 Dec 31	By Depreciation Fund A/c –Bal figure (Loss transferred)	1,261
		<u>16,261</u>			<u>16,261</u>

3. Depreciation Fund Account

2015 Dec31	To balance c/d	Rs <u>7932</u>	2015 Dec 31	By Depreciation A/c	Rs <u>7932</u>
2016 Dec 31	To balance c/d	16261	2016 Dec 31	By balance b/d	7932
			2016 Dec 31	By Bank	397
			2016 Dec 31	By Depreciation A/c	7932
		<u>16261</u>			<u>16261</u>
2017 Dec 31	To Depreciation Fund Investment A/c	1261	2017 Jan 1	By Balance b/d	16261
			2017 Dec 31	By Bank	813
Dec 31	To Lease A/c	50000	Dec 31	By Depreciation A/c	7932
		<u>51,261</u>	Dec 31	By P&L (Bal.figure)	<u>26255</u>
					<u>51,261</u>

Note: Since it is a lease taken by the company and therefore it is transferred to sinking fund account and new lease has been renewed after a period of three years. If it is an asset in place of lease, then it will be sold in the market at scrape value and any profit/loss will be transferred to P&L A/c.

The balance sheet for the three years is illustrated in below

Balance sheet as on 31st December 2015

Liabilities	Rs.	Assets	Rs.
Share Capital	XXX	Lease	50,000
Sinking fund	7,932	Depreciation Fund Investment A/c	7,932

Balance sheet as on 31st December 2016

Liabilities	Rs .	Assets	Rs
Share Capital	XXX	Lease	50,000
Sinking fund	16,261	Depreciation Fund Investment A/c	16,231

Balance sheet as on 31st December 2017

Liabilities	Rs .	Assets	Rs
Share Capital	XXX	Lease	NIL
P&L A/c	26, 255	Depreciation Fund Investment A/c	NIL
		Bank	15,000

CONCLUSION

Different methods of depreciation are used for different purposes and for different assets. Depreciation plays an imperative role in the company's profit and loss account. Out of different methods of depreciation, sinking fund and insurance policy methods are the best depreciation valuation method. Companies adopt these methods to replace the asset after such asset becomes obsolete. These methods help the management to make a perfect decision in determining the depreciation and plan for the replacement of the asset after a period of time. These methods i.e. insurance policy method and sinking fund method helps the management to make minimal year on year investment (which is equivalent to the depreciation) either in insurance policy or government securities and which will help the companies to come out from liquidity crunch while purchasing the new asset/lease.

BIBLIOGRAPHY

1. S.N. Maheshwari, Sunil.K.Maheshwari, Sharad K.Maheshwari, Advance Accountancy, Volume I, 11th Edition, Vikas Publication, 2017
2. S.N. Maheshwari, Sunil.K.Maheshwari, Sharad K.Maheshwari, An Introduction to Accountancy, Volume I, 11th Edition, Vikas Publication, 2013
3. P. C. Tulsian & Bharat Tulsian, Fundamental of Accounting For CA-CPT TATA McGraw Hill, 2014
4. S.P.Jain & Narang, Advance Accounting-Principles of Accounting, Volume I, Kalayani Publication, 2017
5. R.L.Gupta, M.Radha Swamy, Advance Accountancy, Volume I, Sultan Chand & Sons, 13th Edition, 2015
6. Robert. N. Anthony, David. F. Hawkins and Kenneth A. Merchant, Accounting Text and Cases, , 13th Edition, McGraw Hills, New Delhi, 2010
7. John. A. Christensen and Joel. S. Demski, MacGraw Hill, New Delhi, 2003



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