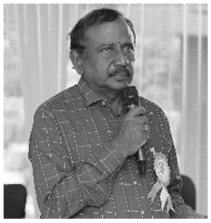

CASE STUDY OF VALUATION OF PLANT & MACHINERY

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The depreciated value will be never equal to the market value. Why??

General method of valuation:

1. Inspection of the machine
2. Recording its specifications
3. Ascertaining the date of purchase
4. Estimating the life span based on the performance of the machine elsewhere
5. Fixing off of the residual value at the end of the life period
6. Confirming it is only a residual value and not the scrap value
7. Ascertaining the replacement value either by market approach or by using Indices
8. Applying depreciation on a straight-line method and calculating the depreciation component
9. Deducting the depreciation component from replacement value to arrive at the market value

This is generally known as the present market value of the machine. But, we miss a lot of other components in this and they are Factors of Obsolescence, the condition of the machine

I. VALUATION OF INDIVIDUAL MACHINERY

1. Value is a function of purpose:

Valuation of plant and machinery also differs with purpose.

2. Value is a function of Time:

Obsolescence plays an important role while valuing the machines, the value arrived at on a particular day holds good on that day alone and cannot be decided for a particular period. For example, the value of HDPE/LDPE/PP processing units came down on the imposition of Jute Mandatory Act to pack types of cement in the 1980s.

3. Value is a function of usage:

Value depends on usage mainly.

The value of an idle/spare machine of the same capacity and configuration cannot be compared with the value of a machine that has been in continuous use.

Similarly, the value of a machine on a batch process cannot be compared with the value of a machine on a continuous process.

Likewise, the value of a standby generator in a less power-cut area might have worn out to a little extent when compared to a generator in the usage of power starving area.

4. Value is a function of maintenance.

The value depends on maintenance to a very great extent.

A machine, if maintained well by replacement of worn-out parts and with periodical overhauling values better when compared to the machine in a poorly maintained condition. The housekeeping of the industry as a whole also plays an important role.

5. Value is a function of process:

Machines in a chemical plant might have suffered corrosion and the life span will be very less when compared to the machine of other use.

A motor of a coupled pump has better longevity than a motor of a mono-block pump.

6. Value is a factor of environment also:

Industry situated in a seashore or in an air-polluted area suffers on corrosion when compared to the industries of another belt.

For exercising the correct procedure and to ascertain the right value, the Valuer must be familiar with the on the following heads.

1. Lifespan:

Due to constant use leading to continuous deterioration, a stage may occur, beyond which it becomes uneconomical or unsafe to use or work with a machine. The period from the date of putting the asset to use till the date it reaches this stage is known as "*Lifespan*" or the "*Life expectancy*" of the asset.

Lifespan depends on various factors.

- Loading of the machine
- Working hours
- Environment
- Quality maintenance and care
- Timely replacement of worn - out parts
- Speed at which the machine is run
- Protection of machine from heat and dust
- Proper usage
- Usage of genuine and apt parts
- To retain proper safety devices required such as fuses or crumbling zones

To determine the lifespan the Valuer should be thorough about the process, the functions of the unit and the job extracted from the plant.
To ascertain these factors, he should have perused the following documents.

⇒ Log book of the machine.
⇒ Maintenance record from the date of installation.
⇒ Production record of the unit as a whole.
⇒ The profitability statement and the balance sheet to ensure the production rate.

Lifespan is not constant for all machines or even for a category of machines. It depends on several points discussed above and the Valuer should not have any thumb-rule for life span of any of the machinery.
The declared age of the machine by a Valuer in any valuation report or in any article could be considered as a suggestive age only and not as the age on all aspects.

2. Depreciation:

The Dictionary meaning of Depreciation is "*a decrease or loss in value because of wear, age, or other causes."* It is also described as the "*fall in value*" or "*to become less worthy*."

The decline in the value of asset is generally termed as depreciation and it can be classified under three major headings.

They are:

- Physical Deterioration
- Obsolescence
- Present condition of the machine.

Depreciation is neither constant for all the machines nor for a particular machine. It is a relative term, related to several aspects as discussed in this paper.

In a nutshell depreciation can be termed as "The Loss that cannot be restored by maintenance and that could result in, due to all factors, causing ultimate retirement of that machine".

It is not to be generalized and considered as 10% per annum as done while accounting in the book of accounts. It also depends on the residual value of the machine, which in turn depends on the material of construction.

Depreciation due to physical deterioration may occur due to any one of the following reasons:

01. *Wear and Tear due to usage:* It is the value of portion worn out, due to usage in the useful life of the machine.
02. *Effect of Deterioration due to corrosion:* It is the value of portion corroded, due to usage in seashore area or in a chemical Industry in the useful life of the machine.
03. *Effect of Deterioration due to aging:* It may be, due to its inherent characteristics or due to external factors such as exposure to weather and soil conditions. It can be also be termed as Decay. It need not only be a result of wear and tear, whereas it might be due to its completion of its life on usage. In this case, the depreciated value could be either the salvage value or the scrap value.

3. Obsolescence:

The present value of machinery is decided not only by the working condition of the machinery, which accounts for depreciation, but also due to obsolescence that has a crucial importance since it greatly affects the value of the machinery. It could be classified as functional obsolescence and economic obsolescence.

3. a. Functional Obsolescence:

The machinery is seldom replaced for their wearing out nature. They are mostly because of the development in science that had paved way for a more efficient machine.

The new generation machine when compared to the existing one, may excel on the following accounts:

- ▶ Higher production.
- ▶ Better working environment.
- ▶ Easy to operate.
- ▶ Easy to maintain.
- ▶ Lesser requirement of space for installation.
- ▶ Lesser consumption of power.
- ▶ Lesser labour Intensive.
- ▶ Lesser risk management.
- ▶ Lesser storage time.
- ▶ Lesser rejection.
- ▶ Equipped with self control system.
- ▶ Pre - programmed operations.
- ▶ Quick work motion duration and so on.

In general, if a new machine could reduce the operational cost and offer better profit potential, it could be preferred. The factors said above pave the way for functional obsolescence. This could be denoted as F_f.

Examples: Electronic Equipments such as Computers, Bio-Medical Equipments, controlling devices of Electronic Equipments, Pouching Machines and Major Mechanical devices with Auto Controls.

3. b. Economic Obsolescence:

Economic obsolescence is forced on a machine; it is by the external factors and not due to its own inherent properties. It may be due to any one of the following reasons:

1. Change in planning policy of the Government.
2. Change in import policy of the Government allowing import of the product in abundance.

3. Change in the relationship between the States from where the product is manufactured and the place where it is used.

The examples of the above are:

- Banning of carry bags and restriction in usage of Plastic materials resulted in throw - away price of such Machinery.
- Import of palm oil had ruined the market of edible oil and the plants installed for Extraction and Refining are uncared.
- Rejection of certain products of Tamilnadu in Karnataka due to Cauvery water issue had made the Industry producing these parts sick.

Economic obsolescence is extremely difficult to evaluate, however it causes steep fall in value of the machinery that manufacture the products that are banned or that had lost the market share.

The machine may be perfectly in a working condition and produce such products at competitive rates. However, they may suffer in price in market and the factor behind it, is known as Economic obsolescence. This could be denoted as F_e.

4. PRESENT CONDITION:

The present worth can be arrived by applying a factor after depreciation. This is known as the "*Condition of the machine or equipment*". To fix up this Factor and to substantiate his valuation, a Valuer should be thorough in the functioning of the machine and also in ascertaining the condition of the machine "*It is basically a result of good Maintenance*".

By the performance, a machine could be classified under any one of the five conditions:

VERY GOOD CONDITION
GOOD CONDITION
FAIR CONDITION
POOR CONDITION
SCRAP CONDITION

Let a factor F_c be denoted as a factor of condition

APPLICATION OF THESE FACTORS TO ASCERTAIN THE PRESENT MARKET VALUE OF THE USED MACHINES.

The depreciated value due to physical Deterioration can be calculated as said above

Depreciated value for the purpose of valuation = *Replacement value of the machinery* - *Depreciation value*

"Present worth" is the value that a machine can fetch on sale in the open market, without any abnormal conditions of sale, between a willing Buyer and a willing Seller, both having prudent knowledge about the product

Let F_f be the Factor for functional Obsolescence, F_e be the Factor for Economical Obsolescence and F_c be the Factor of Condition.

Present worth = Depreciated value x F_f x F_e x F_c of the machine

Hence, the depreciated value of the machine can never be the market value
The above passage deals about individual machineries However in the case of an industrial unit several other factors are also to be considered.

II. VALUATION OF INDUSTRIAL UNIT AS A WHOLE

In an industrial unit as a whole value depends on several other factors, in addition to Land, Building and Machinery.

They are:
1. To consider the entire entity as a plant
2. Geographical advantage of the location
3. Availability of skilled Labour
4. Availability of power
5. Clearance from Pollution control board
6. Registration with concern Departments
7. License
8. Experience in running the plant
9. Adequate knowledge about the plant as a whole
10. Gestation of Time
11. Goodwill that has been earned
12. Amount spent on promoting the brand

In a nutshell, it is valuing a business and not only the asset.

To sight an example, if a bus route is to be valued, It is not merely the bus, but it is with the route.

Here, we don't value the bus alone; we consider, how busy the route is, the collection it makes, number of trips it is permitted and the collection it makes.
So as to say, if a car is valued, it is the car as a whole and we do never do a biopsy and value component wise such as value of engine, transmission shaft wheels and tyres
For Example, to highlight about the goodwill and the amount spent, ULTRATECH CEMENT LIMITED, Grasim cements, has spent in 2022-2023 477.22Cr. as advertisement charges to achieve a sales Target of 100.6 million Metric Tons for a turnover of Rs. 60,463 Cr.
where are we to observe this much of value?

It is also learnt that the investment cost of a Cement Mill is valued at Rs. 25,000/Ton of production and not by adding the value of individual assets such as value of Land, Building and Machinery.
In a similar way the investment in a sugar mill, without value of land component was estimated on a Thump rule basis for a crushing capacity of 2500 tons processing capacity, the cost of the plant and machinery is approximately Rs 40 to 50 Cr. In

addition to the present, we have to add on real estate, structures, working capital, etc. The total expenditure required to fix an Indian sugar mill is at least Rs 125 C

Hence, doing a biopsy and valuing the machinery on by applying depreciation will never be the right method of doing a valuation of an industry. Once again **we have to value a business and not only the asset**

Hence, the Depreciated value of an individual machine or an industry as a whole will never be equal to the market value. Application of mind and the experience that a Valuer possess alone will take it to the nearest value.

Please find here below the tentative cost estimate for the erection of different sizes of Sugar Mills with the Co-Generation power plant and Distillation Alcohol Plant.

Cost Estimation for the erection of the Sugar Plant with the Co-Generation Power Plant and Distillation Alcohol Plant.

Sl.no	Description	Proposed Sugar Crushing Capacity (In Metric Tons of crushing per day TCD)	Size of the Co-Generation power plant. (In Mw)	Size of the Distillation Alcohol Plant (in Klpd)	Cost for the Proposed Sugar mill – Mill House and Boiling House (Rs in Crores)	Cost for the proposed Co Generation power plant. (Rs in Lacs)	Cost for the Proposed Distillation Alcohol Plant. (Rs in Crores)	Cost for the Infrastructur edevelopment such as office, ware house etc (Rs in Crores)	Gross Total Cost (Rs in Crores)	Erection Cost per Ton of Cane Crushing (Sugar mill # Co Gen & Distillery) (Rs in Crores)
1	Small Capacity Sugar Mills	2500 to 3000	10 to 12	30 to 40	250	125	85	40	500	16.67
2	Medium Capacity Sugar Mills	5000 to 6000	20 to 25	60 to 80	450	250	170	70	940	15.67
3	Large Capacity Sugar Mills	8000 to 10000	35 to 45	120 to 160	650	400	275	150	1475	14.75
5	Higher Capacity Sugar Mills	12000 to 15000	50 to 65	200 to 260	1000	600	425	225	2250	15

Assumptions:

Please note that these above estimates are approximate and may vary depending on the following various factors such as:

a. Technology and equipment selection
b. Location and logistics
c. Labour and material costs
d. Government policies and incentives
e. Project implementation schedule.

The offers from the plant and Machinery are to be collected for arriving at the exact cost of the proposed sugar plant with the co-generation and Distillation Alcohol plant after

finalizing the design of the plant and energy conservation practices to be implemented in the proposed plant.

Additional Costs:

The following additional cost (Approximately) shall be taken in to consideration while during the project preparation stages.

1. Land acquisition and development: 50-100 Crores

2. Working capital and contingency funds: 100-200 Crores

3. Interest and financing costs (during construction): 50-100 Crores

Approximate Break up prices for the Civil construction Cost:

Detailed Split Up Cost (Approx.) for the Civil Related expenditures for the erection of the Sugar Mill with the Co-Generation and Distillation Alcohol Plant.

Sugar Mills	Small Capacity	Medium Capacity Sugar Mills	Large Capacity Sugar Mills	Higher Capacity Sugar Mills
Descriptions	(2500 to 3000 tcd)	(5000 TO 6000 tcd)	(8000 to 10000 tcd)	(12000 to 15000 tcd)
1. Sugar Mill Building:	15-20 Cr	30-40 Cr	50-65 Cr	80-100 Cr
2. Boiler House	8-12 Cr	16-24 Cr	28-40 Cr	45-60 Cr
3. Turbine House	10-15 Cr	20-30 Cr	35-50 Cr	55-75 Cr
4. Distillation Plant Building	8-12 Cr	16-24 Cr	28-40 Cr	45-60 Cr
5. Storage Godowns	5-8 Cr	10-16 Cr	20-30 Cr	30-45 Cr
6. Office Building & Amenities	5-8 Cr	10-16 Cr	20-30 Cr	30-45 Cr
7. Roads, Drainage & Utilities	10-15 Cr	20-30 Cr	35-50 Cr	55-75 Cr
8. Foundations for Equipment	8-12 Cr	16-24 Cr	28-40 Cr	5-60 Cr
Grand Total Cost for the Civil Construction in a sugar Mill	**69 to 112 (In Rs Crores)**	**138 to 224**	**244 to 375**	**385 to 555**

Please Note:

a. These estimates are approximate and may vary depending on location, soil conditions, and other factors.
b. Costs are based on average rates in India and may fluctuate depending on region and market conditions.
c. These estimates do not include costs for equipment, electrical, mechanical, and other works.
d. To have a detailed Consultation with civil engineers, architects, and contractors for arriving at the more accurate estimate for your specific project.

Also, the following involved cost are also to be suitably considered for arriving at the Civil Cost for the erection of the Sugar Mill.
a. Land acquisition and development costs
b. Working capital and contingency funds
c. Interest and financing costs (during construction)
d. Other infrastructure costs (water supply, electricity, etc.)

***<u>Opinion of the valuer</u>*:**

While doing valuation of Plant & machinery, if we value the land, Building & Machinery alone, by a method of biopsy, how will be able to value the features said above