International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 10 Issue: 06 | Jun 2023 www.irjet.net p-ISSN: 2395-0072

STUDY ON VALUATION OF PLANT AND MACHINERY – CASE STUDY OF DRIP IRRIGATION PIPE EXTRUSION MACHINERY

Mr. Eshwar Tushar Kawale[1], Prof. Amol K. Raundal[2]

[1]Student, MTech Valuation (Plant and Machinery), Sandip University, Nashik, Maharashtra, India
[2] Professor, Sandip University, Nashik, Maharashtra, India

Abstract - *The project report focused on determining the fair market value of a DRIP irrigation pipe extrusion manufacturing unit. It considered factors such as depreciation, condition, market dynamics, comparative prices, maintenance history, technological advancements, and industry trends. Transparent documentation was provided for accurate financial reporting. The report aided stakeholders in decision-making, risk mitigation, negotiations, tax planning, and compliance efforts. It contributed to the field's knowledge and supported the unit's value optimization. Overall, it served as a comprehensive guide for assessing the unit's fair market value and enhancing its market performance.*

***Key Words*: Maintenance, Assets, plant, machinery, Valuation, Market Value, Depreciation.**

1. INTRODUCTION

Valuation is the process of estimating the value of tangible assets for various purposes. It involves considering factors such as structure, life, maintenance, and location. Valuation includes creating/replacing property, predicting earnings, and determining overall value. Competent valuers need specialized knowledge, including legal aspects and asset use restrictions. Economic, market, legal, and technical aspects are studied in valuation. Factors like identification, physical parameters, aesthetics, specifications, age, and maintenance influence value. Different approaches and methodologies are used. Valuation relies on data and considers distinct meanings of price, cost, and value. Plant and machinery are valued for both tangible assets and intangible rights derived from ownership.

.

1.1 Purpose of Valuation

Valuation is a complex process that considers various factors and purposes. Valuation may be required for purposes such as new reinstatement insurance, income tax, stamp duty, sale/purchase transactions, leasing, collateral security, foreign collaboration/mergers, B.I.F.R. cases, S.E.B.I. approval/public issues, modernization decisions, disposal, partnership dissolution, mortgage, creditor safety, and book purposes. Each purpose requires a specific valuation approach to determine the value accurately. Valuation serves as a crucial tool for decision-making, financial reporting, and ensuring the integrity of assets.

1.2. Plant & Machinery and its Valuation

Plant and machinery valuation can be categorized into two main types:

- That forming part of the factory or commercial building services installation, which are normally included in valuation of land & buildings
- those directly related to industrial or commercial processes such as fixtures and fittings, moulds and loose tools.

However, the value of physical plant and machinery is depending upon the interests of individuals or parties involved in a transaction. Valuing plant and machinery separately from these interests is meaningless. Valuation requires considering factors such as utility, marketability, scarcity, transferability, as well as physical, legal, social, and economic aspects. Each factor should be appropriately weighted based on the purpose of the valuation

2. METHODOLOGY

2.1 Procedure for valuation of Plant & Machinery

The standard procedure for conducting the valuation of plant and machinery involves the following steps:

- Instruction: Receive clear instructions regarding the scope of work, location, purpose, and date of valuation from the client or the entity requesting the valuation.

- Data collection: Obtain necessary data from the client, including a list of plant and machinery to be valued, original cost with a breakdown, year of purchase, and manufacturing process flow diagram. Gather additional information such as ownership details, company history, utilization purposes, maintenance records, electrical layout, capacity, production history, and other relevant documentation.

- Data analysis: Perform an ABC Analysis to identify the important plant and machinery based on their value. Concentrate on gathering relevant information about these assets from the plant and the market. Select an appropriate valuation approach, basis, and method considering the asset types, valuation purpose, and any specific client instructions. The three basic approaches are cost, market, and income approaches.

  Assumptions and limiting conditions: Make reasonable assumptions for data that is not available as of the valuation date. These assumptions can be based on the valuer's expertise, judgment, machine condition, market trends, and other relevant factors. Identify limiting conditions where necessary information is unavailable or withheld by the client.

- Report writing and submission: Prepare a comprehensive valuation report that includes information, analysis, and opinions in a clear and concise manner. The report should address the subject matter, reference client's letters, provide a brief identification of plant and machinery, state the purpose and date of valuation, present findings, opinions, and conclusions. Include the professional fees and enclose the bill along with the report. Submit the report in duplicate or triplicate to the appointing person or as instructed by the client. Preserve all relevant documents and data collected during the valuation process for future reference.

In short, the valuation process involves receiving clear instructions, collecting relevant data, analysing the data, making assumptions and considering limiting conditions, and preparing a comprehensive report for submission.

2.2 Different approaches of valuation

Valuation of Plant & Machinery can be approached using three methods: cost, market, and income.

- Cost Approach: Relies on historical data and the assumption that acquisition cost reflects present market value. Adjustments are made for depreciation and obsolescence.

- Market Approach: Estimates value based on market prices of comparable assets. Requires finding similar assets and analysing their market prices.

- Income Approach: Determines value based on the net revenue or income generated by the asset. Considers factors like residual life and future earnings potential.

Using multiple approaches is recommended when there is insufficient data for a single method to produce a reliable valuation. Each approach has its advantages and limitations, and a combination provides a more comprehensive valuation.

2.3 Depreciation

Depreciation refers to the loss in value of an asset over time due to usage, wear and tear, or obsolescence. It is a non-cash expense recorded in the profit and loss account. Depreciation can be caused by physical deterioration, economic obsolescence, functional obsolescence, or technological obsolescence.

Various methods are used to calculate depreciation, including the straight-line method, written down value method, annuity method, sinking fund method, and production unit method. Each method has its own formula and is chosen based on the company's needs.

3. CASE STUDY

Table -1: Basic Details of Property

Company Details	
Year	2022-2023
Company name	Perfect Irrigations
Property Owner Name	Mr. S. S. Patil
Property Address	MIDC, Satpur, Nashik, Maharashtra
If the asset is under joint Ownership/Co-ownership, share of each owner	Joint Ownership
Latitude, Longitude	19.88530° N, 73.97905° E
Reference Date	2022
Valuer	Self
Whether indigenous or imported	Indigenous
Date of Visit	Nov 2022
Valuation for	Study Purpose
Purpose of Valuation	To Assess the Fair Market Value, to know individual share of each partner
Brief Description	Large producer of drip irrigation pipes
Age of Company	10 years

Table -2: Calculation of the machinery as per Cost approach method

Sr. No	Machinery Name	QTY	YOM	Current replacement cost	Depreciation Cost	Fair Market Value
1	Pipe extrusion machine Make: S. M. Technologies Capacity: 200 coils/day	1	2019	1,50,00,000	21,60,000	1,28,40,000
2	Air compressor Make: Ingersoll Capacity: 20hp	1	2019	1,85,000	33,300	1,51,700
3	Chiller Make: Blue Star Capacity: 10Tr	1	2019	1,12,000	20,160	91,840
4	RO Water plant Capacity: 500ltr	1	2019	1,00,000	24,000	76,000
5	Hopper Dryer Capacity: 60ltr	1	2019	46,000	11,040	34,960
6	Pipe extrusion machine Make: Yogesh Engineering Capacity: 48 coils/day	1	2016	40,00,000	10,08,000	29,92,000
7	Air compressor Make: Ingersoll Capacity: 7.5hp	1	2016	50,000	15,750	34,250
8	Chiller Make: Blue Star Capacity: 5Tr	1	2016	75,000	23,625	51,375
9	Pipe extrusion machine Make: Yogesh Engineering Capacity: 56 coils/day	1	2014	40,00,000	12,96,000	27,04,000
10	Air compressor Make: Ingersoll Capacity: 10hp	1	2014	76,000	30,780	45,220
11	Chiller Make: Blue Star Capacity: 5Tr	1	2014	75,000	30,375	44,625
12	Mixing Hopper Capacity: 150ltr	1	2014	60,000	32,400	27,600
			TOTAL	**2,37,79,000**	**46,85,430**	**1,90,93,570**
	Less obsolescence @ 7.5% (Note: We are not included auxiliary equipment's)					**(-)**13,90,200
						1,77,03,370
	Subtotal say					**1,77,04,000**

The project assessed the Fair Market Value of a Drip irrigation pipe manufacturing plant. It provided insights into the industry's condition, simplified financing, and determined accurate market rates. The equipment's working condition was confirmed through maintenance and inspection. The report included the replacement value, estimated useful life, and depreciation calculations using the straight-line method. Overall, it helped the owner make informed decisions and understand the equipment's true value.

4. RESULT

We determined the fair market value of the machines involved in the manufacturing process of a Drip irrigation pipe plant. The machines include Pipe extrusion and Auxiliary machines such as Chiller, Air compressor, Dryer hopper, and Hopper mixture. The cost approach method and straight-line depreciation were used to calculate the fair market value. By considering factors like initial purchase price, estimated residual value, and current replacement cost, the fair market value of the machines was determined to be Rs 1,77,04,000 (One Crore Seventy-Seven Lakhs Four Thousand Rupees Only).

5. CONCLUSION

The project report assessed the fair market value of a DRIP irrigation pipe manufacturing unit, considering factors such as depreciation, equipment condition, market dynamics, and industry trends. It provided transparent documentation for financial reporting and supported stakeholders in decision-making and negotiations. The report contributed to knowledge in valuation and aided tax planning. Overall, it served as a comprehensive guide for optimizing the unit's value and performance in the market.

REFERENCES

1) Kirit P. Budhbhatti “STUDY MATERIAL FOR THE EXAMINATION IN THE DISCIPLINE OF” prepared by: centre for valuation studies, research and training association cvsrta- plant and machinery.

2) Josep mª. Argilés bosch, anna sabata aliberch, josep garcía blandón, A COMPARATIVE STUDY OF DIFFICULTIES IN ACCOUNTING PREPARATION AND JUDGEMENT IN AGRICULTURE USING FAIR VALUE AND HISTORICAL COST FOR BIOLOGICAL ASSETS VALUATION

3) Nasirov, E., and M. Masimdjanova. "THE ANALYSIS OF APPROCHES AND METHODS FOR THE VALUATION OF MACHINERY AND EQUIPMENT." International Finance and Accounting 2020.2 (2020):

4) T. A. Ashaolu, Valuation of Machinery and Equipment: Is it Inter-disciplinary, Multi-disciplinary or Collaborative

5) Satish, B. Aware, et al. "A Review on Valuation of Building, Vehicles, Plants and Machinery."

6) Akinwande, T. O., and O. L. Umeh. "An evaluation of valuers‘ approach to depreciation in plant and machinery valuation in Lagos State, Nigeria." FUTY Journal of the Environment 12.2 (2018).

7) Nasir, Abdul Rahman Mohd, and Chris Eves. "THE NEED FOR STANDARDISATION OF PLANT AND MACHINERY VALUATION PRACTICES IN MALAYSIA." (2016).

8) Manganelli, Benedetto, Pierluigi Morano, and Francesco Tajani. "The market value of in use industrial machinery." submitted to International Conference on Advanced Material and Manufacturing Science (ICAMMS) Beijing, China December. Vol. 20. 2012.

9) Udoekanem, Namnso Bassey. "Students‘ perception of the teaching and learning of plant and machinery valuation in a Nigerian university." Ethiopian Journal of Education and Sciences 8.2 (2013):

10) EKEOCHA, Rowland JO. "Machinery and Equipment Valuation." World Journal of Engineering and Pure & Applied Sciences 2.2 (2012):

11) Erinle, T. J., O. K. Ukoba, and O. M. Adesusi. "Evaluation of Plant and Machineries: Case Study of PZ Nigeria." Pacific Journal of Science and Technology 12.2 (2011):

12) Ogunba, Olusegun, and Kehinde Ogunniyi. "PHYSICAL DEPRECIATION MODELLING IN THE USE OF DEPRECIATED REPLACEMENT COST FOR THE VALUATION OF PLANT AND MACHINERY."