

ROTO-MOULDED PLASTIC WATER STORAGE TANKS

QUALITY STANDARD : IS: 12701-1996

MONTH & YEAR OF : DECEMBER, 2009
PREPARATION :

PREPARED BY : Micro Small & Medium
Enterprises-Development
Institute, 10-Industrial
Estate, Pologround,
INDORE. (M.P.)

INTRODUCTION:

Roto Moulded Plastic water Storage Tanks are made from Linear Low Density Polyethylene/Low Density Polyethylene. These tanks are light in weight, therefore, it is easy to fix them at the place of choice. These tanks require no painting, no water proofing since Polythene is 100% resistant to water and salt corrosion. In rotational moulding products is formed inside a closed mould rotating biaxially in two plains perpendicular to each other. In batch type-rock-N- Roll type Rotational Moulding machines; frame of the machine is turned in a primary axis while mould is rotated in secondary axis.

Because rotational moulding does not involve any injection pressure, high shear rates, this process offers certain basic advantages over other processes and techniques of plastic processing.

1. Complex parts can be moulded without need for past assembly.
2. Low machinery cost relative to production capacity.
3. Double walled items can be produced.
4. Ease of colour and material change.
5. Multiple product and multi colours can be moulded at the same time.
6. Minimum wastages
7. High production capacity on selected parts.
8. Production design freedom.

These tanks keep water clean, odour free and maintain the quality of water stores intact. These tanks are economical, practical and hygienic alternative of storing portable water in single or multi storied residential units, industrial set-ups, commercial establishments and sites everywhere under the sun. These tanks are becoming increasingly popular in Indian and have caught the eyes of many users for their requirement of storing water for domestic and other purposes. These tanks are also used in hostels, hospitals, schools, cinema houses and construction sites.

MARKET:

Roto-Moulded Plastic Water Storage Tanks being lighter in weight are easy in handling and can be easily fitted at any desired place, and are hence preferred and practically replacing the conventional tanks of steel, cement concrete or stone. These tanks are available in market in various sizes and shapes. The prices of these tanks are at the rate of Rs. 3.5 per liter of water capacity approximately. The demand of plastic water storage tanks is increasing day by day. They are not only installed in the individual houses and flats but are fitted in factories, group housing schemes and multi-stories buildings as well.

Field investigations have revealed that due to increase in the house building activities and preference given by the Government to provide homes to the homeless people, the demand for plastic water storage tanks is likely to increase in the years to come. Hence there is good scope for establishing a few units for the manufacture of water storage tanks by Roto Moulding process.

BASIS AND PRESUMPTION:

1. The scheme is based on single shift (8 hours) basis and 300 working days per annum.
2. The estimates are drawn for a production capacity generally indicated techno economically viable for model type of activity.
3. Cost in respect of land and building, machinery and equipments, raw-materials and the selling prices of the finished products etc. are those generally obtained at the time of preparation of the project profile and may vary depending on various factors.
4. The time period for achieving full/envisaged capacity utilization is three years.
5. The interest rates considered are those which are presently charged by state financial institutions.
6. The labour wages are considered as per the prevailing rates. They may vary from place to place.
7. The margin money is 25% for fixed capital and working capital. The pay back period for the project is 3 years.

IMPLEMENTATION SCHEDULE:

Six months time required for preparation of project report, selection of site & SSI registration etc.

(ii) One to one and half years time is required for availability of finance/loan, construction of factory shed, machinery procurement, erection and commissioning trials runs and recruitment of staff and labour etc.

TECHNICAL ASPECTS:

1. MANUFACTURING PROCESS:

The LLDPE granules are mixed with granules of black colour concentrates. These are extruded and strands are chopped as granules so as to achieve uniform distribution of carbon black. The granules are pulverized in a special pulverization system to 30 to 40 mesh powder. This powder is fed in the mould in the required quantity. The burners of the Roto Moulding Machine are fired with help of LPG or Diesel and the moulds are heated to 300°C to 350 ° C. Molten powder when rotated in the heated moulds form hollow storage tank. After proper time when the tank is ready, the mould is cooled and opened and the tank is taken out. Finishing of the tanks is done manually.

2. SPECIFICATIONS:

Roto Moulded Tanks are manufactured as per IS:12701-1996.

This standard covers the requirements of materials dimensions, construction shape, tolerances on dimensions, fittings workmanship, performance requirements and inspection and testing of rotational moulded polythene water shortage tanks. This standard is applicable only to water storage tanks subjected to the following two conditions:

1. Own hydrostatic head of water.

2. Tank with uniform flat base support.

The internal and external surface of the water storage tank should be smooth clean and free from other hidden internal defects, such as air bubbles, pits and metallic or other foreign material inclusions. The mould parting line and excess material near the top rim of the tank shall be cut and finished to the required level. Defects like air bubbles and pits at mould parting line and at top rim of main man-hole shall be repaired by hot air filler rod welding method.

3. Capacity of the unit (per annum) 3000 Nos. of Roto Molded Plastic Water Storage Tanks of various capacities varying from 100 liters to 5000 liters on single shift basis.

FINANCIAL ASPECTS:

(1) Fixed Capital

Land and Building

(A) Land :	1000sq.metres –	Rented
Covered area- 670 square meters including factory shed, office & godown		Rs.10000/- per month

PLANT & MACHINERY

		Rs.
1. Roto Moulding Machine size 13'x7' complete with 15 HP, 5HP and 2 Nos. of 3 HP Motors, 19 number of burners two reduction gear boxes Rotary shaft and connecting rulers.	1 No.	15, 00,000/-
2. Plastic welding Machine	1 No.	15,000/-
3. Hoist Chain Pulley with stand	1 No.	19,500/-
4. D. G. Set 40 KVA Capacity	1 No.	1, 85,000/-
5. Moulds of various sizes	15 Nos	3, 00,000/-
6. Spray Compressor	1 No	9,500/-
7. Grinding Machine with motor	1No	45,000/-
8. Weighing Machine	1 No.	7,500/-
9. Work-shop Equipments	L.S.	35,000/-
10. Cutting table	1 No	7,500/-
11. Installation and Electrification Charges @10%		2, 12,400/-
12. Foundation of Rotational Moulding Machine		45,000/-
13. Office Furniture and Fixers of general use.		<u>35,000/-</u>
	Total	<u>24, 16,400/-</u>

WORKING CAPITAL PER MONTH:

(a) Staff and Labour (Per month)		Rs.	Rs.
1. Works Manager	1 No.	8,000/-	10,000/-
2. Accountant -cum-Storekeeper	1 No.	6,000/-	6,000/-
3. Skilled Worker	3 Nos.	5,000/-	15,000/-
4. Unskilled worker	4 Nos.	4,000/-	16,000/-

5. Chowkidar	1 Nos.	4,000/-	<u>4,000/-</u>
Perquisites@15% of salaries			<u>51,000/-</u>
		+ 15% 7,650	<u>58,650/-</u>

RAW MATERIAL

1. LLDPE 12.5 MT @ Rs. 62/- per Kg.	Rs. 7, 75,000/-
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UTILITIES (per month)

1. Power	7,500/-
2. Water	1,000/-
3. Fuel 1000 Ltrs diesel @ 38 per liter	<u>38,000/-</u>
	<u>46,500/-</u>

OTHERS EXPENSES (PER MONTH)

1. Rent	10,000/-
2. Carbonisation charges of 12.5 MT of LLDPE @4.5 per kg.	56,250/-
3. Repairs & Maintenance	5,000/-
4. Stationery & Telephone etc.	5,000/-
5. Traveling & Transport etc.	<u>6,000/-</u>
	Rs. <u>82,250/-</u>

WORKING CAPITAL (P.M.)

Rs.

1. Staff & Labour	58,650/-
2. Raw-material	7, 75,000/-
3. Utilities	46,500/-
4. Other contingent expenses	<u>82,250/-</u>
Total Working Capital (per month)	9, 62,400/-

Working Capital for 3 months 9,51,400x3 = Rs. 28,87,200/-

TOTAL CAPITAL INVESTMENT

Rs.

1. Total Fixed Cost	24, 16,400/-
2. Working Capital for 3 months	<u>28, 87,200/-</u>
	Rs. <u>53, 03,600/-</u>

MACHINE UTILISATION:

3000 numbers of Roto Moulded Plastic Water Storage Tanks of various capacities varying from 100 liters to 5000 liters capacity on single shift basis. .

FINANCIAL ANALYSIS

Cost of Production (per annum)	Rs.
1. Working capital expenses	1,15, 48,800/-
3. Depreciation on machinery & equipments @ 15%	3, 62,460/-

4.	Interest on total capital investment @ 15%	<u>7, 95,540/-</u>
		Rs.1, <u>27, 06,800/-</u>

TOTAL SALES (per annum)

Sale of 3000 Nos. of Roto Moulded Plastic water Storage Tanks	Rs. 148, 50,000/-
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PROFITABILITY (per annum)

Total Sales – Cost of Production		
=148, 50,000-127,06,800	=	Rs. 21,43,200/-

<u>NET PROFIT RATIO:</u>	14.43%
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<u>RATE OF RETURN</u>	40.41%
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BREAK EVEN POINT:

Fixed Cost:

1.	Interest on capital investment @15%	7,95,540/-
2.	Depreciation on machinery and equipments @ 15%	3, 62,460/-
3.	40% on wages, utilities & other expenditures	<u>8,99,520/-</u>
		Rs. <u>20,57,520/-</u>

=	$\frac{\text{Fixed cost} \times 100}{\text{Fixed cost} + \text{profit}}$
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BEP =	$\frac{20,57,520 \times 100}{20,57,520 + 21,43,200}$	=	$\frac{20,57,520 \times 100}{4200720}$	=	48.98%
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ADDRESSES OF PLANT & MACHINERY SUPPLIERS:

1. M/s. Jai Industrial Works, 22-26A, Industrial Estate, 22 Gown, Jaipur
2. M/s. Super India, B-45, Lawrance Road, New Delhi – 110035
3. M/s. Batliboi & Co. Ltd., Post Box No. 479,V.B. Gandhi Road, Fort, Bombay-23
4. M/s. Lotus Machines (P) Ltd., 1059, Industrial Area Phase-II, Chandigarh-160002

ADDRESSES OF RAW MATERIAL SUPPLIERS:

1. M/s. Indian Petrochemicals Corpn. Ltd., P.O. Petrochemicals, Vadodara
(Gujarat)-391346
2. M/s. Reliance Petrochemicals, Maker Chember IV, 3rd Floor, 222, Nirman Point,
Bombay-400021
