Credit Linked Capital Subsidy Scheme

1. Background

1.1 The Ministry of Small Scale Industries (SSI) is operating a scheme for technology upgradation of Small Scale Industries (SSI) called the Credit Linked Capital Subsidy Scheme (CLCSS). The Scheme aims at facilitating technology upgradation by providing upfront capital subsidy to SSI units, including tiny, khadi, village and coir industrial units, on institutional finance (credit) availed of by them for modernisation of their production equipment (plant and machinery) and techniques. The Scheme (pre-revised) provided for 12 per cent capital subsidy to SSI units, including tiny units, on institutional finance availed of by them for induction of well established and improved technology in selected sub-sectors/products approved under the Scheme. The eligible amount of subsidy calculated under the pre-revised scheme was based on the actual loan amount not exceeding Rs.40 lakh.

1.2 Due to insufficient investment and lack of awareness of both the quality standards and access to modern technologies, a large percentage of SSI units continue with outdated technology and plant & machinery. With increasing competition due to liberalisation of the economy, the survival and growth of the SSI units are critically dependent on their modernisation and technological upgradation. Upgradation of both the process of manufacture and corresponding plant and machinery is necessary for the small enterprises to reduce the cost of production and remain price competitive at a time when cheaper products are easily available in the global market.

1.3 It is in this background that the Finance Minister made an announcement in the Budget Speech of 2004-05 to raise the ceiling for loans under the Scheme from Rs. 40 lakh to Rs. 1 crore and rate of subsidy from 12 per cent to 15 per cent. Further, in the light of the experience gathered in implementing the Scheme, certain other modifications were also required to make it more useful to the SSI units, including tiny, khadi, village and coir industrial units, in taking up technology upgradation on a larger scale.

1.4 After considering these issues, the CLCSS has been amended as follows :

(a). the ceiling on loans under the Scheme has been raised from Rs. 40 lakh to Rs. 1 crore;

(b). the rate of subsidy has been enhanced from 12 per cent to 15 per cent;

(c). the admissible capital subsidy is to be calculated with reference to the purchase price of plant and
machinery, instead of the term loan disbursed to the beneficiary unit;

(d). the practice of categorisation of SSI units in different slabs on the basis of their present investment
for determining the eligible subsidy has been done away with ; and

(e). the operation of the Scheme has been extended upto 31 st March, 2007.

The above amendments are effective from September 29, 2005.

2. Objective

2.1The revised scheme aims at facilitating technology upgradation by providing 15 per cent upfront capital subsidy with effect from the 29 th September, 2005 (12 per cent prior to 29.09.2005) to SSI

units, including tiny, khadi, village and coir industrial units (hereinafter referred to as SSI units), on institutional finance availed of by them for induction of well established and improved technologies in the specified sub-sectors / products approved under the scheme.

3. Scope of the Scheme

3.1The scheme would cover the following technology needs / products/sub - sectors:

i) Bio-tech Industry
ii) Common Effluent Treatment Plant
iii) Corrugated Boxes
iv) Drugs and Pharmaceuticals
v) Dyes and Intermediates
vi) Industry based on Medicinal and Aromatic plants
vii) Plastic Moulded/ Extruded Products and Parts/ Components
viii) Rubber Processing including Cycle/ Rickshaw Tyres
ix) Food Processing (including Ice Cream manufacturing)
x) Poultry Hatchery & Cattle Feed Industry
xi) Dimensional Stone Industry (excluding Quarrying and Mining)
xii) Glass and Ceramic Items including Tiles
xiii) Leather and Leather Products including Footwear and Garments
xiv) Electronic equipment viz test, measuring and assembly/ manufacturing, Industrial process control; Analytical, Medical, Electronic Consumer & Communication equipment etc.
xv) Fans & Motors Industry
xvi) General Light Service(GLS) lamps
xvii) Information Technology (Hardware)
xviii) Mineral Filled Sheathed Heating Elements
xix) Transformer/ Electrical Stampings/ Laminations /Coils/Chokes including Solenoid coils
xx) Wires & Cable Industry
xxi) Auto Parts and Components
xxii) Bicycle Parts
xxiii) Combustion Devices/ Appliances
xxiv) Forging & Hand Tools
xxv) Foundries – Steel and Cast Iron
xxvi) General Engineering Works
xxvii) Gold Plating and Jewellery
xxviii) Locks
xxix) Steel Furniture
xxx) Toys
xxxi) Non-Ferrous Foundry
xxxii) Sport Goods
xxxiii) Cosmetics
xxxiv) Readymade Garments
xxxv) Wooden Furniture

xxxvi) Mineral Water Bottle
xxxvii) Paints, Varnishes, Alkyds and Alkyd products
xxxviii) Agricultural Implements and Post Harvest Equipment
xxxix Beneficiation of Graphite and Phosphate
xxxx) Khadi and Village Industries
xxxxi) Coir and Coir Products
xxxxii) Steel Re-rolling and /or Pencil Ingot making Industries
xxxxiii) Zinc Sulphate
xxxxiv) Welding Electrodes
xxxxv) Sewing Machine Industry

A list of Well Established and Improved Technologies is enclosed at Appendix-I. The cost of plant and machinery mentioned in Appendix – I is only indicative. Actual cost may be taken for the purpose of calculation of subsidy

3.2 As the Scheme progresses, the list of products / sub-sectors may be expanded by inducting new technologies / products / sub-sectors with the approval of the Competent Authority, i.e. the Governing and Technology Approval Board (GTAB) / Technical Sub-Committee(TSC) of the CLCSS.

4. Nodal Agencies

4.1 The Small Industries Development Bank of India (SIDBI) and the National Bank for Agriculture and Rural Development (NABARD) will continue to act as the Nodal Agencies for the implementation of this scheme.

4.2 As decided in the 5 th meeting of the Governing and Technology Approval Board (GTAB) of the Credit Linked Capital Subsidy Scheme (CLCSS) held on February 17, 2006 the following nine Public Sector Banks/ Government Agencies have also been inducted as nodal banks/agencies for implementation and release of capital subsidy under the CLCSS:

S. No.	Name of Bank/Agencies
1.	State Bank of India
2.	Canara Bank
3.	Bank of Baroda
4.	Punjab National Bank
5.	Bank of India
6.	Andhra Bank
7.	State Bank of Bikaner & Jaipur
8.	Tamil Nadu Industrial Investment Corporation
9.	The National Small Industries Corporation Ltd.

4.3 The inclusion of above-mentioned nodal banks/agencies will be in addition to the existing nodal agencies, namely, the Small Industries Development Bank of India (SIDBI) and the National Bank for Agriculture and Rural Development (NABARD) under the CLCSS. These nodal banks/ agencies would consider proposals only in respect of credit approved by their respective branches,

whereas, for other Primary Lending Institutions (PLI), the SIDBI and the NABARD would continue to be the nodal agencies for release of subsidy under this scheme.

4.4 The cut-off date for implementing the above decision is April 04, 2006 . No proposals after this cut off date will be sent to the SIDBI or the NABARD, as the case may be, by these banks/agencies and the new nodal banks/agencies would start processing proposals directly after this cut-off date for release of subsidy under the CLCSS.

4.5 Other modalities for implementing the above decision will remain the same as are currently in practice in the case of the SIDBI and the NABARD.

5. Eligible Primary Lending Institutions (PLI)

5.1 All Scheduled Commercial Banks , Scheduled Cooperative Banks [including the urban cooperative banks co-opted by the SIDBI under the Technological Upgradation Fund Scheme(TUFS) of the Ministry of Textiles], Regional Rural Banks (RRBs), State Financial Corporations (SFCs) and North Eastern Development Financial Institution (NEDFi) are eligible as PLI under this scheme after they execute a General Agreement (GA) with any of the nodal agencies, i.e., the Small Industries Development Bank of India (SIDBI) and National Bank for Agriculture and Rural Development (NABARD).

5.2 Details of eligible Scheduled Commercial Banks, SFC, Cooperative Banks [including urban cooperative banks co-opted by the SIDBI under the Technological Upgradation Fund Scheme(TUFS) of the Ministry of Textiles]/ and RRBs under this scheme are provided at Appendix II.

6. Eligible Beneficiaries

6.1 The eligible beneficiaries include sole Proprietorships, Partnerships, Co-operative societies, Private and Public limited companies in the SSI sector. Priority shall be given to Women entrepreneurs.

7. Types of units to be covered under the Scheme

i). Existing SSI units registered with the State Directorate of Industries, which upgrade their existing plant and machinery with the state- of -the -art technology, with or without expansion.

ii). New SSI units which are registered with the State Directorate of Industries and which have set up their facilities only with the appropriate eligible and proven technology duly approved by the GTAB/TSC.

8. Eligibility Criteria

i). Capital subsidy at the revised rate of 15 per cent of the eligible investment in plant and machinery under the Scheme shall be available only for such projects, where terms loans have been sanctioned by the eligible PLI on or after September 29, 2005 . Machinery purchased under Hire Purchase Scheme of the NSIC are also eligible for subsidy under this Scheme .

ii). Industry graduating from small scale to medium scale on account of sanction of additional loan under CLCSS shall be eligible for assistance.

iii). Eligibility for capital subsidy under the Scheme is not linked to any refinance Scheme of the Nodal Agency (ies). Hence, it is not necessary that the PLI will have to seek refinance in respect of the term loans sanctioned by them from any of the refinancing Nodal Agencies.

iv). Labour intensive and/or export oriented new sectors/ activities will be considered for inclusion under the scheme.

9. Definition of Technology Upgradation

9.1 Technology upgradation would ordinarily mean induction of state-of-the-art or near state-of-the-art technology. In the varying mosaic of technology obtaining in more than 7500 products in the Indian small scale sector, technology upgradation would mean a significant step up from the present technology level to a substantially higher one involving improved productivity, and/or improvement in the quality of products and/or improved environmental conditions including work environment for the unit. It would also include installation of improved packaging techniques as well as anti-pollution measures and energy conservation machinery. Further, the units in need of introducing facilities for in-house testing and on-line quality control would qualify for assistance, as the same is a case of technology upgradation.

9.2 Replacement of existing equipment/technology with the same equipment/technology will not qualify for subsidy under this scheme, nor would the scheme be applicable to units upgrading with second hand machinery.

10. Duration of the Scheme

Presently, the scheme is in operation up to March 31, 2007 or till the time sanctions of aggregate capital subsidy disbursed by the Nodal Agencies reaches Rs.600 crore, whichever is earlier.

11. Ceiling on eligible loan amount and capital subsidy

11.1 The maximum limit of eligible loan under the revised scheme is Rs. 100 lakh. Accordingly, the ceiling on subsidy would be Rs.15 lakh or 15 per cent of the investment in eligible plant and machinery, whichever is lower.

i). In calculating the value of plant & machinery, the following shall be excluded, namely :

• the cost of equipments such as tools, jigs, dies, moulds and spare parts for maintenance and the cost of consumable stores;

• the cost of installation of plant & machinery;

• the cost of research & development equipment and pollution control equipment (except where these have been approved for specific product/sub sector by the GTAB ;

• the cost of generation sets and extra transformer installed by the undertaking as per the

regulations of the State Electricity Board; (except where gas based generation sets have been approved for specific product/sub- sector by the GTAB).

• the bank charges and service charges paid to the National Small Industries Corporation Ltd or the State Small Industries Corporation;

• the cost involved in procurement or installation of cables, wiring, bus bars, electrical control panels (not those mounted on individual machines), oil circuit breakers or miniature circuit breakers which are necessarily to be used for providing electrical power to the plant & machinery or for safety measures;

• the cost of gas producer plants (except where these have been approved for specific product/sub sector by the GTAB) ;

• transportation charges (excluding of sales-tax and excise) for indigenous machinery from the place of manufacturing to the site of the factory;

• charges paid for technical know-how for erection of plant & machinery;

• cost of such storage tanks which store raw materials, finished products only and are not linked with the manufacturing process; and

• cost of fire fighting equipment.

ii). The amendments to the existing CLCSS are applicable with effect from 29.9.2005. The revised rates are applicable only in cases where the loans have been sanctioned/ approved on or after September 29, 2005 . Cases where the loans were sanctioned/ approved prior to September 29, 2005 will be governed by the pre-revised guidelines regarding ceiling on subsidy (Rs.4.80 lakh), method of calculation of subsidy, etc.

iii). Units which have already availed subsidy under the pre-revised CLCSS scheme (before 29.9.2005), cannot claim additional subsidy on account of difference in the rate of subsidy which is now permissible under the revised guidelines.

12. Working Capital Requirements

12.1 Since success of the technology upgradation scheme, to a large extent, depends upon the availability of adequate working capital, lending institutions would like to be assured that the borrowing units have made adequate arrangements for meeting the working capital requirements. Commercial banks should also accord priority in providing adequate working capital support to the assisted units.

13. Other conditions for loans

i). Promoters' contribution, security, debt-equity ratio, up-front fee, etc. will be determined by the

lending agency as per its existing norms.

ii). Units availing subsidy under the CLCSS shall not avail any other subsidy for technology upgradation from the Central/State/UT Government. However, cases covered under National Equity Fund (NEF) Scheme, which are otherwise eligible under the CLCSS can also be covered under this scheme.

iii). Units in the North-Eastern Region which are availing financial incentives/subsidy under any other scheme from the Government in the Region would, however, be eligible for subsidy under the CLCSS.

iv). One of the main requirements for sanction of assistance under the technology upgradation scheme will be availability of competent management in the unit concerned to carry out the upgradation programme and to manage the operation of the unit efficiently. Towards this end, the lending agencies may stipulate conditions as may be considered necessary.

14. Procedural Aspects

i). All the eligible PLI (excluding the new nodal banks / agencies) will have to execute a General Agreement (GA) for availing capital subsidy under the scheme, irrespective of the fact whether refinance is availed by them or not.

ii). The PLI may have the flexibility to execute the GA with either of the nodal agencies or with both the nodal agencies for providing subsidy to the eligible beneficiaries under the scheme. However, in the latter case, while claiming the subsidy from one nodal agency, the PLIs will have to give the undertaking to the nodal agency that they have not claimed subsidy under CLCSS in respect of the beneficiary unit from the other nodal agency (as the case may be).

iii). After sanction of the assistance, the eligible PLI will get an agreement executed with the concerned SSI unit on behalf of Government of India (GoI). Format of the agreement to be executed by the eligible PLI with the SSI unit is provided in Appendix III.

iv). The eligible PLI would obtain application for assistance under the CLCSS in the prescribed form provided in Appendix – IV.

v). The eligible PLI shall furnish subsidy forecast on quarterly basis, through their Head Office (HO), which will act as a nodal office, to the Regional Office (RO)/Branch Office (BO) of the SIDBI or the NABARD (as the case may be) located in the region. The subsidy forecast information for every quarter on or before 1 st March for April-June quarter, on or before 1 st June for July-September quarter, on or before 1 st September for October-December quarter and on or before 1 st December for January-March quarter, may be furnished as per prescribed format.

vi). The eligible PLI would release the subsidy amount with each installment of loan in a manner proportionate to the amount of term loan disbursed (on pro- rata basis), subject to the ceiling of the term loan/ subsidy amount as per applicable guidelines of the CLCSS.

vii). The eligible PLI shall furnish details of release of subsidy to the beneficiary units, together with the request for replenishing advance money placed with PLI for release of subsidy, on quarterly basis on March 1, June 1, September 1 and December 1. The requests of PLI for replenishment of advance money for subsidy, however, would be entertained by the nodal agencies only on receipt of complete details of subsidy released to the beneficiary units.

viii). The eligible PLI shall be responsible for ensuring eligibility for sanction of subsidy to the SSI units in terms of Government of India guidelines under this scheme and also for disbursal and monitoring of the assisted units.

15. Other Parameters

i). The Governmental assistance cannot be utilised for the purposes other than for which it has been sanctioned. The eligible PLI shall have to strictly follow this norm and no deviation would be permitted.

ii). In case, it is found that capital subsidy from the Government has been availed of on the basis of any false information, the industrial unit shall be liable to refund the Government the capital subsidy availed, along with interest to be charged from the date of disbursal to the date of refund. The rate of interest shall be the prime lending rate of the PLIs concerned at the time of invoking this penal clause.

iii). The eligible PLI shall, therefore, incorporate suitable conditions in respect of point at (ii) above in their security documents entered into with the unit, which would give necessary authorisation to proceed legally in such eventualities.

iv). The credit risk under the Scheme will be borne by the eligible PLI and as such, they will have to make their own commercial judgement while appraising the project. The credit decision of the eligible PLI will be final.

v). There shall not be any binding obligation on the part of the nodal banks/ agencies to obtain sanction from GoI for the government assistance in respect of the proposals which are covered under the CLCSS.

vi). Both the SIDBI and the NABARD shall have the right to inspect the books of eligible PLI and the loan accounts irrespective of whether refinance is availed or not from the Nodal Agency (ies) under this Scheme and/ or call for any other information as may be required by GoI from time to time.

vii). Both the SIDBI and the NABARD shall have the right to recall from eligible PLI the entire amount of the capital subsidy in respect of their assisted units irrespective of whether or not the eligible PLI have recovered the said subsidy from their units, if they come to the conclusion that any of the accounts do not conform to the policies, procedures and guidelines laid down under the CLCSS guidelines and as stipulated by the GoI/the Nodal Agencies from time to time.

viii). The beneficiary unit shall remain in commercial production for a period of at least three years after installation of eligible plant and machinery on which subsidy under CLCSS has been availed.

16. Monitoring of the scheme

16.1 The scheme is monitored by the Governing and Technology Approval Board (GTAB of the CLCSS. The Secretary (SSI) is the Chairperson of the Board and the Additional Secretary & Development Commissioner (SSI) is its Member-Secretary. The GTAB would also periodically review the functioning of the scheme. There is a Technical Sub-Committee under the GTAB to consider inclusion of new sub-sectors/products and Well Established and Improved Technologies under the Scheme

APPENDIX-I

i. Bio-tech Industry.

(Cost mentioned is only indicative)

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Manufacturing & Processing.	Fermentation or Bioreactor.	50	Technology for new emerging area.
		Lyophilizer.	15	
		Refrigerated centrifuge.	5	
		Thermocycler..	20	
		DNA/Micro organism synthesizers/sequencer.	50 -80	
		Sterlisation and autoclave equipment.		
		Incubators.	Variable as per actuals.	
		High Pressure Liquid Chromatography/(HPLC).	-do-	
		Spectrophotometers(UV Spectrometer).	-do-	

ii. Common Effluent Treatment Plant.

iii. Corrugated Boxes.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Manufacturing & Processing.	Automatic corrugated making plant	35 for 3 ply and 60 for 5 ply	3 – 5 ply can be made without any manual pasting on automatic machine, automatic drying facilities, improves productivity and quality of board.
		Thermic fluid boiler or	7 - 10	Heats up entire length

		steam boiler using agri residue.		of the roll uniformly, more thermal efficient
		Web based coating machine for water based coating	75 (Imported)	Larger size of printing and faster drying of the printed material.
		Folder gluer - semi-automatic/-automatic.	4 - 10	Rust free pasting suitable for packaging of food
2.	Printing.	Multi colour flexo printer slotter for flexographic printing	7	processed products.Web based coating is echo-friendly, food grade, recyclable and being water based, free from fire hazard.
3.	Testing & Quality Control.	Micro processor based bursting strength tester	2	Equipment for testing strength of the box.
		Micro processor based compression strength tester.	3	Equipment for testing compression strength of the box.
		Micro processor based crust tester.	1.75	Equipment for testing edge crush, flat crush and pin adhesion strength of the box.

iv) Drugs and Pharmaceuticals.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
Tablet and capsule section .				
1.	Dispensing.	Reverse laminar flow equipment.	1.50	Safety of personnel.
2.	Weighing.	Automatic electronic balance 300 kg.; 150 kg. and 1 kg.	0.50-2.depending on the model.	Accurate weighing of raw materials; Increased productivity.
3.	Mixing and granulation .	Rapid mixer granulator 200 L capacity.	3 to 4	Increased productivity; better quality product.
4.	Dry granulation.	Roller compactor.	1.50 to 3	Increased productivity.
5.	Drying.	Fluidized bed dryer 200 L capacity.	3 -50	Increased productivity.
6.	Size reduction.	Clitzmill or Cadmill.	0.40	Increased productivity.
		Oscillating granulator.	0.15	Increased productivity.

7.	Sifter.	Vibrating sifter 24 inches diameter		Increased productivity.
8.	Coating suspension.	Colloid mill	0.80	Increased productivity.
10.	Compression.	16 station rotary tablet machine.	2	Increased productivity.
		27 station rotary tablet machine.	3.25	Increased productivity.
11.	De-dusting of tablets.	On-line de-duster.	0.25	Improved product quality.
12	Capsule filling.	Semi-automatic capsule filling machine.	6	Increased productivity.
13.	Capsule polishing.	Automatic polishing machine.	2	Increased productivity.
14.	Printing of packaging cartons.	Semi-automatic.	2	Increased productivity.
Liquid oral section				
15.	Water generation.	RO water plant.	6	
16.	Mixing vessel.	Variable speed stirrer.	0.50	Increased productivity.
17.	Homogenization..	Colloid mill.	0.75	Increased productivity; Better product quality.
18.	Bottle washing.	Automatic rotary line.	4	Increased productivity, better product quality.
19.	Liquid transfer.	Transfer pump.	0.20	Increased productivity.
20.	Filling machine.	4- head automatic filling machine.	2	Accurate fill volumes.
Injectable Section				
21.	Filtration.	Filter cartridges.	0.50 to 1	Increased productivity.
22.	Integrity of the membrane filter.	Bubble point apparatus.	0.75	Better product quality.
23.	Vial filling machine.	Automated filling machine with sealing facility.	5	Increased productivity; better control on product sterility.
24	Equipment for Sterilisation by Moist Heat.	S.S. Horizontal Autoclaves (Steam, Sterilizers), Double Door with automated control and monitoring systems as electronic timer with	1.70	Increased productivity better control on the product quality and sterility.

		Digital indicator, automatic Low Water cut off device, temperature recorder (Thermograph) and pressure gauges.		
25	Equipment for Sterilisation by dry Heat.	S.S. Dry Heat Sterilizer (Class 100 with HEPA filter, Fully automatic S.S. Control Panel with Printer memory circuit, fixed probes and Thermo-graph for recording each sterilization cycle S.S. Cooling system, sealed Dampers, motorized internal Baffles, S.S. Loading trolley, S.S. Carriage.	10 -11	Increased productivity better control on the product quality and sterility.
Dry Syrup Section				
26.	Filling machine.	Automated auger filling machine.	2	Increased productivity.
27.	Labeling.	Automated labeling machine.	2	Increased productivity.
Lactum Tab/Cap Machine .				
28.	Acetum Tab/Cap Machine.	1)Blister Pack Machine. 2) Strip Packing Machine.	3.80 2	These machines are required to avoid contamination with other non-B-Lactum group products.
Quality Control Department				
29.	Drug assay.	High performance liquid chromatograph.	12	Accurate drug analysis.
30	Pollution control.	Effluent Treatment Pollution Control machinery.	10 – 15	Biochemical treatment of effluent removes 90 to 95% of soluble organic matter in the waste.
31.	Microbiological Lab in Quality Control Department.	1) B.O.D. Incubators. 2) Incubators.	1 0.45	These machines are required to improve the quality of the

		3) Laminar Air Flow.	0.75	finished products by way of testing.
Environment Control Devices.				
32	Air conditioning and humidity control of all types of areas.	Air conditioning. Humidity control equipment (Dehumidifier).	0.20 –0.30 per ton 0.10 -0.25 per ton for Desiccant based; 0.06 to 0. 10 per ton for Chiller based.	Improve product stability, enhance personal comfort.
	Air handling for parenteral (Sterile)area.	Air handling unit with HEPA filters, Ducting with insulation; Chilled water piping; electrical cabling and panels; chilled water pump; chilled water control.	0.20 per ton 0. 30 - 0.35 per ton.	Improves product quality, enhanced personal safety.
	Air handling other for parenteral area.	Air handling unit with 5 micron filters.	0.15 per ton	Improves product quality, enhanced personal safety.
	Miscellaneous fittings.	Ducting with insulation; chilled water piping electrical cabling and panels; chilled water pump; chilled water control.	0.20 - 0.25 per ton.	
.	General	1) Reverse Laminar Air Flow. 2) Dust Extractors. 3) Non A.C.-A.H.U. in Terms of C.F.M.	0.60 1 0.50 per unit.	To avoid contamination during dispensing of raw materials. To control environment at manufacturing section where dust is generated. To control environment at manufacturing section where dust is generated and Air conditioning is not required, only filtered air is

				required.
N 2 O Gas for Hospital use.				
33.	Testing and quality control.	Gas Chromatograph and Moisture Meter for On-line Quality Control for Purity of N 2 O Gas used for anesthetic purpose.	Variable as per actual.	For controlling the purity of N 2 O gas.

b).**Antacid Bulk Drugs like Aluminum Hydroxide Gel, Magnesium Hydroxide, Magnesium Trisilicate etc .**

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Reaction.	S.S. Reactor.	4 for capacity of 15000 litre.	1.Tremendous improvement in the quality. 2. Teak wood trees are saved resulting in better environment & atmosphere.
2	Reaction.	Glass lined Reactor.	40 for capacity of 10000 litre.	1.Tremendous improvement in the quality. 2. Teak wood trees are saved resulting in better environment.
3	Filtration.	P.P. Filter Press.	8 for 60 pairs.	1. Quality improvement. 2. Time saving Device. 3.Saving of water consumption. 4.Quantitative improvement.
4.	Drying.	S.S. Dryer with modern facilities Spray/Flash.	40	1. Anti Air pollution device. 2. Improves the quality of the product. 3.Free from foreign contamination.
5.	Centrifugation.	Centrifuge (S.S. or Rubber Lined).	10	1. Quality of the product improves. 2. No corrosion. 3. Saving of time. 4. Saving of labour.
6.	Raw material and finished	Electronic Weighing Machine.	0.15	1. Saving of time. 2. Saving of labour.

	product weighing.			3. No loss of material. 4.Increase in the profitability.
7.	Quality control.	Laboratory Equipment of latest technology, spectrophotometer, Gas Chromatograph & others.	10	1. To get the best possible precise results. 2. Less time consuming & immediate results display.
8.	Pulverisation.	Latest technology pulverisers Impact Type.	4	1.Quality of products improves due to finest particles. 2.Physical loss of material is very less.

v). Dyes & Intermediates.

Sl. No.	Activity	Technology Need	Cost (Rs.in lakh)	Advantages
1.	Filtration System.	Membrane Filtration System.	10.-12	Improved filtration system prevents formation of hard cake and improves filtration by reducing total dissolved solids (TDS) .
2.	Ice Flaker.	Flaker with Silo and Screw conveyer.	8 -10	-Ice could be made from soft water so that less insoluble in products has better solubility. -Ease in charging ice since it is automatic. -No spillage and loss of energy. -No water losses and latent heat loss as compared to present practice. -Better process control.
3.	Reactors.	Closer vessels with planetary gears and high speed turbine stirrers.	Depends on the batch size.	-Better mixing of reactants, -Low power consumption, -Better yields.
4.	Product Drying System.	Flash dryers or Rotary Vacuum Dryers-RVD.	10 -12	-Low cost drying with minimum or no handling. -Instant drying with no pulverizing.

				-RVD effective for heat sensitive products. Low initial investment as compared to the Spray Dryer.
5.	Incinerator.	Use of Gasifier with slurry economizer.	5 -7	-Alternate fuel like rice husk, saw mill waste etc. could be used so cheaper. -Heat recovery leads to low temperature emissions and less cost and no corrosions to the chimney .
6.	Blenders.	Nauta Mixers.	12 -13	-Energy Efficient, No breaking of Grains. Less dusting and no manual charging and discharging.

vi). Industry based on medicinal and Aromatic Plants.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Extraction of resinoid from refused material .	Solvent extraction unit attached with stripping unit Extractor capacity – 500 kg. Stripping unit Capacity – 100 kg.	40	Proper utilization of refuse waste material for improving, economy of the process.
2.	Menthol Bold Crystal.	Deep freezers and extraction unit deep freezer cap. 250 kg. Extraction unit cap 180 kg.	25	Used bulk drugs, pan massala, Tobacco & Flavour products.
3.	Manufacturing of Aroma chemicals. • Hydroxycit- Ronellal. 2.Ionones. 3.Rose crystals . 4.Orange crystals.	1.Glass lined reactor cap 60 liters. 2. Chilling plant cap 2.5 tones. 3. Fractionation unit cap 180 kg.	30	Used in Fragrance & Flavour industries.
4.	Extraction of	Cold press expeller for	2.50	To obtain Neem oil of

	Good Quality Neem oil using cold press expeller.	extraction of Neem oil with higher Azadirachtin content. (Capacity of expeller – 9 Bolts).		improved quality for preparation of pesticide and other pharmaceutical preparation.
5.	Quality assessment of essential oils.	Establishment of modern (accreditated) equipped with sophisticated equipment lab.	10	Proper quality assessment of essential oils.

vii). Plastic Moulded/ Extruded Products and Parts/ Components including reinforced plastic/composite material.

(a) Plastic Moulded/ Extruded Products and Parts/ Components.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Moulding.	a) fully automatic Micro processor controlled Plastic Injection Moulding machines.	10 - 20	Very high rate of production , cost effective, no wastage, better and consistent quality.
2.	Tool making.	b) CNC Milling Machine for In-house Tool room.	33	For production of quality dies and moulds.

b). Plastic Moulded /Extruded products and Parts/components (products based on reinforced plastic/composite material).

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Manufacturing.	Hydraulic Press.	45	PLC controlled-for constant and fast cycle time. Unit can get 8 batches instead of 6 batches per day.
2		Filament winding machine.	0.50	This is advanced technology for making FRP pipes by using low cost material. Rovings are used instead

				of woven fabrics to save cost.
3		Pultrosen machine.	1. 50	Latest technology machine with reverse of extrusion- Pultrosen moulding for continuous moulding of section for structural application provided with 3 production stations. 3 times product can be made with 3 different dies at a time.
4		Impregnating machine.	3. 50	To make 'B' stage – prepeg impregnated material for constant quality of industrial plastic laminates.
5		Boiler.	13. 50	High pressure 250 psi-3.0 ton integral furnace boiler with fuel efficiency condensate recovery system.
6		Oven.	1	Infra red heaters to save electrical energy 30%-40%.
7		Resin Kettle.	0.50	Normal good plant for making resins.
8		Guillotine Jointer.	2	Hydraulic clamping and hydraulic cutting to avoid rejection while cutting.
9		Plastic extruder	1.64	Increased

		machine with cutter.		production capacity, efficiency, less rejection rate and less cost of production.
10		Plastic pulviriser with screen.	1.65	

c). Fibre glass Reinforced Products.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Trimming of formed plastic components.	Pneumatic hand tools. Receiver, Pneumatic piping & Dehumidifier.	0.05 6.20	Less maintenance and breakdown cost. Uninterrupted warming less rejection since operating at higher speed than electrical tools. Energy conservation.
2	Plastic components bonding.	Electronic vibration welding & pressing machine.	2.25	Friendly environment, less cycle time, cost saving.
3	Slots for components.	Power press with interchangeable dies Press.	0.85	Cost saving due to less rejection.
4	Painting on plastic & FRP product.	Air handling equipment. Dehumidifier.	0.90 0.20	Superior finish with glass.

d). Thermocol packaging.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Manufacturing.	Fully automatic PLC hydraulically operated Moulding machine.	As per prevalent market rate.	Increased productivity and efficiency.

viii). Rubber Processing including Cycle/ Rickshaw Tyres.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Small Rubber	Injection moulding	25	Very high rate of

	Mouldings, such as, oil seals, washers etc.	Machine.		production, minimum wastage, better and consistent quality.
2	Continuous vulcanisation system.	Roto-cure machine.	75 -100	Continuous production of high quality rubber mats. Wastage is minimum, output high.
3	Rubber mixing.	Kneader/ Banbury internal mixer.	10- 15	Suggested for the units where soft compounds are used for the manufacture of products like hawai sheets, mats etc. Relatively high output, less pollution due to avoidance flying chemicals.
4	Extruded products.	Clod feed extruder.	20 - 25	By using this machinery, the additional operation of warming of rubber compound prior to extrusion can be avoided. This increases out put of the unit as this eliminates one intermediate operation.
5	Rubber bands.	Multi channel extruder.	8-10	Presently the rubber bands are being manufactured from latex by dipping technology. By using multi channel extruder, rubber bands can be manufactured from dry rubber. Advantages are high out put, no pollution, minimum

				cost of production.
6	Items such as hawai sheet/rubber mats. etc.	Sheeting line.	20-30	High out put, minimum wastage, uniform quality.
7	Rubber mouldings.	De flashing system.	15-20	High output, minimum rejection.
8	Heating system.	Thermic fluid .	5 - 10	Uniform heating and more thermal efficiency.
9	Hydraulic press.	Vacuum chamber type hydraulic moulding machine.	30 - 40	Eliminate bumbing operation for the removal of entrapped air in the product. Minimum rejection high output.
10	Testing equipment.	1.Rheometer. 2.Tensile testing machine. 3.Mooney viscometer. 4.DIN/Abrader. 5.De-Mattia Flexing Machine. 6.Goodrich Flexometer. 7.Ross Flexing Machine. 8.MST Apparatus for latex. 9.Viscometer for latex.	20- 25 15.- 20 15 - 20 5 4 10 5 4 3	Introducing state-of-the art testing facility for in-house testing and online quality control.

b). **Latex Based Male Condoms.**

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Sealing &	Sealing Machine with	5.50	Saving in laminate

	packaging.	facility for sealing both square and rectangular type formats with on line printing and v notch cutting facility.		consumption, higher yield, on line printing of individual stripes by means of hot foil stamping as per statutory requirement for exports.
2.	Testing.	Burst Volume Burst Pressure Equipment fully automatic with electronic sensors software and computer – with 2 testing stations.	5	Increase of efficiency in testing, accurate results , batch results are generated by the system automatically.
3	Testing.	Conductivity Tester with software.	5.50	Products are tested electronically and test results are recorded in the computer with accuracy.
4	Pollution Control.	Pressurized Ventilation System with filtered air, temperature and humidity control.	12	Reduction in pollution by reducing dust in manufacturing area, better working conditions. To obtain required humidity for improvement in quality of product.

c) Rubber Processing – Crumb Rubber.

Sl. No.	**Activity**	**Technology**	**Cost (Rs. in lakh)**	**Advantages**
1	Rubber processing-crumb rubber units.	Bio-mass Gasifier based drying furnace.	8 to 10	1 Saving of conventional fuel (diesel/electricity). 2 Reduction of wood consumption up to 50%. 3. Environment friendly technology. 4 Easy to operate and maintain.

ix). Food Processing (including Ice cream Manufacturing).

a). Food Processing.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Pickles, Sauces and Chutney manufacturing.	Automatic fruits and bottles washing machine with conveyor, blower, pump and agitator, fruit and vegetable cutting machine, stainless steel double walled steam jacketed kettles (tilting type), boiler, pulper/crusher, sterilizing tank/retort, mixer-cum-blender, spice roaster-cum-grinder, filling and sealing machine (crown and corking machine), shrink wrapping,, strapping machine, laboratory equipment, effluent treatment system.	20	Improvement in sanitary and hygienic conditions, micro contamination, quality and productivity.
2.	Spice grinding.	Cryogenic grinding, automatic FFS packaging.	20	Improves sensory qualities, productivity as well as shelf life of the product.
3.	Bakery products Manufacturing.	Shifting from semi-mechanisation to mechanisation, replacement of coal/wood fired oven to oil fired/electric oven, Bio mass fired multipurpose drier, energy efficient low cost bakery oven (wood fired) installation of quality testing instruments.	40	Improves quality and shelf life of the product, reduces smoke nuisance.
4.	Cashew Processing .	Boiler, heat exchanger with complete accessories, packaging machine, electronic weighing machine, etc.	20	Recovery of cashew nut shell liquid, enhancement of shelf life of cashew nuts, less pollution.

5.	Rice Milling with rubber roller cum sheller (without parboiling) and modern rice milling with parboiling system.	Paddy cleaner, destoner, rubber roller cum Sheller, paddy separator, boiler, par boiling system, dryer, colour sorter, cone polisher, quality control lab and pollution control.	90 to 100	Better polished, less breakage and high yield of rice, bran suitable for oil recovery, good export opportunity for scented/Basmati rice.
Wheat Flour Mill				
1.	a) Cleaning Section.	1) All Metal Aspirator Vibro Separator. 2) Scourer with Aspiration Channel. 3) D'Stoner with Fan & Cyclone. 4) Water Wheel Damper. 5) Low Pressure Fan. 6) Air Lock with Glass & Stand. 7) Cyclone. 8) Warm Conveyor. 9) Elevator-Bucket size. 10) Air Ducting. 11) Gravity Spouting Cleaning System.	0.70 0.55 1.20 0.08 0.30 0.11 0.15 0.70 1.80 0.42 0.80	Modern mill producing atta, maida, suji and bran.
	b) Milling Section.	12) Roller Mills including Grooving & Grinding. 13) Wooden Plan Sifter & Feed 16 Sieves. 14) All Metal Purifiers. 15) Bran Finisher.	6.80 1.70 0.50 0.22 0.15	

		16) Low Pressure Fan. 17) Low Pressure Cyclone. 18) Air Lock with Stand. 19) Air Conducting for Pnumatic & Purifier. 20) Warm Conveyor 8'size for Milling Section Pneumatic System including Cyclone, Feeder, Rubber, Glasses, H.P. Fan, Lifet. 21) Pipe Bend etc. 22) Gravity Spouting of Milling Section with Hoopers, Packing , Stand etc. 23) Magnets. 24) Reduction Gear Box. 25) Swiss Bolting Cloth, Sifter, Purofier, Pad, Nam. 26) V'Belt for complete Mill(Fenner/Dunlop). 27) V'Belt Motor, Pully for all machines. 28) Motor Rail Fabricated Fabrication Material-Plan Sifter, Cyclone, Air Ducting, Warms, H.P. Fan, Stand, Pneumatic. 29) System Fitting etc.	0.15 0.04 0.40 0.70 1.95 1.40 0.16 0.24 0.70 0.40 0.30 0.15 1.50	

7.	Ice cream Manufacturing.	1. Homogeniser. 2.Continous freezers. 3. Automatic ice cream bar freezer. 4. Automatic rotary fillers. 5. Hardening Chamber. 6. Automatic wrapping machine. Quality control lab.	Variable as per actual.	Improved quality and productivity of ice cream and maintenance of sanitary and hygienic conditions.

b). Namkeen.

Sl. No.	Activity	Technology Need	Cost (Rs.in lakh)	Advantages
1	Namkeen making.	Bio-mass Gasifier based furnace.	3 -4	1. Replacement of 10-15 litre/hour diesel with local biomass. 2 Eco-friendly. 3 Cost effective.

c). Sweet meat .

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Sweet meat making.	Bio-mass Gasifier based Furnace.	1	1. Replacement of 5-6 litre/hour diesel with local biomass. 2. Eco-friendly. 3. Cost effective.

x). Poultry Hatchery & Cattle Feed Industry.

Sl. No.	Activity	Technology Need	Cost (Rs.in lakh)	Advantages
1	Poultry Hatching.	1. Fully controlled sanitation and hygienic conditions of	Variable as per actuals.	• Quality hatched with more disease resistance capacity.

		employees and premises. 2. Vaccination to new hatched chicks (automation). 3.Fully automatic and controlled incubation system with quality control labs . 4.Pollution control equipment.		• Better value addition through export of day old chicks.
2	Cattle feed manufacturing.	1.Cleaning operation of raw material by using machine. 2.Automatic control grinding of raw material. 3. Fully automatic controlled blender for mixing of vitamins and minerals. 4. Complete Palletising unit. 5 .Automatic packaging system. 6. Quality control testing lab. 7. Pollution control equipment. 8. Energy conservation/energy saving system based on energy audit report.	Variable as per actuals.	More demand of cattle/poultry and fish feed in palletized form. High value addition and export opportunities.

xi). Dimensional Stone Industry (excluding quarrying and mining)

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Stone Processing.	Blocks Cutting Technology: (Block squaring machine,	20	Capacity Enhancement,

		block cutters).		Uniform quality.
		Slab Cutting Technology: (Gang saws, Granite cutters, Sandstone cutters).	85	Capacity Enhancement, Uniform quality.
		Tile cutting Technology: (Tiling Plant, Splitting Machines).	95	Better quality Capacity Enhancement.
		Surface Finish Technology (Automatic Polishing Lines, Continuous Polishing Lines, Bush Hammers, Flame Jets, Ageing machines, Edge Polishing Machines, Grinding and Lapping Machines.	95	Better quality, Capacity Enhancement.
		Resin Impregnation Technology for stone strength enhancement (resin coating plants, ovens, compressors, resin guns etc.).	65	Higher recovery percentage capability to process newer varieties to international norms.
		Technology for Integrated manufacturing : (CNC operated Work Centres, sculpting machines).	90	Capability to mass-produce intricate product patterns, high precision.
2.	Products Design.	Laser Technology Duplicating Machines, Pantographs, etc. for sculpting and duplicating artwork and monuments.	90	Capability to mass-produce intricate product patterns, maintain high precision and introduce new product lines.
3.	Edge Profiling.	Chamfering machines, profiling machines, contouring machines.	75	Capability to mass-produce intricate. profiles and introduce new product lines.
4.	Packaging.	Tile Packaging Machines Segregation & Sorting Machines, Foam Packaging machines.	20	Packaging for export market so as to enhance value and reduce breakage in transit.
5.	Environment Conservation & Management.	Water Recovery & Waste Disposal Technologies (including filter press, sedimentation tank,	20	Recovery of water, reduction in waste volume, improvement in

		overhead/ underground tank, piping and channeling etc.).		ambient air, soil and water quality.
6.	Waste Utilization.	Machines using slurry as a raw material.	50	Reduction in environmental degradation.
7.	Testing and Standardization	In house Testing Technology *(sizing & calibration equipment.*	10	Quality control.

xii). Glass and Ceramic Items (Insulator ceramic, electrical ceramics, porcelain, Bone china ware, Stone ware, earthen ware, Terra-cotta ceramic) including Tiles

a). Glass Products

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Melting.	Improved Gas Fired 12-Pot Furnace.	30	The improved version will have better fuel efficiency and longer life as compared to the conventional one.
		Day Tank Furnace.	15	Operation of Day Tank Furnace is intermittent like that of a Pot Furnace without the hassles of Pot breakage. It may be employed in case of demand of a particular kind of glass is 500 kg. to 5 T/day.
2.	Pot-Preheating.	Improved Single Pot Arch.	1.50	In the conventional Pot Arch, pots can be preheated properly and also the maximum achievable temperature is 950°C as against the required temperature (1200°C) chances of developing cracks in pot are higher. The improved version of Pot Arch overcomes these difficulties.
3.	Pot making.	Set up of different machines.	10	The improved Pot making facility will have the machines like Jaw Crusher, Blender, Pug –

				Mill, Edge Runner etc. for processing of raw materials and also temperature and humidity controlled room for molding and drying of Pot. Conventional Pot making facilities lack these things and do not yield good quality Pots.
4.	Glass Forming.	IS-Machine (10-12 Tons/day).	50	IS-Machines have much higher productivity than Press Machines and Mouth Blowing. Product. Quality will be much better.
5.	Testing & Quality Contro	Small Scale Laboratory.	15	A small in house laboratory to meet the need for simple and routine tests will prove very helpful in quality control and improve productivity.
6.	Energy Conservation and Improvement in working condition.	Insulation, heat Recovery System, Modification of Furnace.	15	Its implementation will improve thermal efficiency of the furnace along with the working environment by reducing heat losses through furnace structure, recycling waste heat and improving furnace life and ease of furnace operation.
7.	Heat Treatment.	Improved Muffle Furnace.	1	Gas fired muffle furnace will improve productivity, the working condition and the working environment.
8.	Raw material handling.	Improved Batch House and Batch handling system.	10	Conventional system of Firozabad Glass Industry creates lot of dusting and health hazards to the workers. A properly

				designed system will be free from dusting and will reduce health hazards by providing improved working conditions.
9.	Combustion Control for gas fired furnaces.	Automatic Controllers & Recorders for Furnace Temperature. On-Line Oxygen Analyzer.	50	Automatic Control will improve energy/efficiency and productivity by optimizing the Combustion process and minimizing the energy and production losses.
10.	Glass Forming Techniques.	Spinning Machine 1-Head, 2-Head, 4-Head.	1.50 2 3	Flat and round items like Bowls, Plates etc. can be produced in this machine with better surface finish than the same products of Press Machines. Presently, in Firozabad, these are produced mostly by Press machine.
11.	Glass Forming Techniques.	Injection Molding Machine.	2	Solid items like stem wares, which are produced manually, can be produced in this machine with much better accuracy & control.
12.	Glass Beads making.	LPG fired Bead making Furnace.	0.50	Multi coloured Glass Beads have very good export value. These are mostly produced domestically in rural areas using Coal fired ovens which create very dirty and unhygienic atmosphere. LPG fired Bead making furnace developed by CGCRI, Khurja is clean, simple and easy to operate. It consumes 250 to 300 grams of LPG/hr.

b). Ceramic Items (Insulator ceramic, electrical ceramics, porcelain, Bone china ware, Stone ware, earthen ware, Terra-cotta ceramic) including Tiles.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Raw material processing.	Ball mill with high alumina tile lining, high alumina balls of different size.	2 -10	• Improve grinding.
2.			0.50-3	• Reduce time of grinding.
3.	Fabrication.	Ball Mill with silex stone / porcelain lining of different size.	0.50-1.50	• Lower contamination in the batch.
4.	Drying.		0.25-2	
5.	Glazing.	Blunger/Agitator of different size.	0.80-1.50	• High abrasion resistance of tiles & balls.
	Firing Section.	Magnet of different size.		
		Filter press different si ze.	0.70-1.80	• Longer life.
		Pug Mill different Size.	0.75-2.50	• Suitable for very fine grinding below 10 micron.
		Vibro energy mill for colur grinding. (different size).	2-5	• Saving of colour.
		Vibro finishing mill.	3-5	• Uniform contrast.
		De-airing pug mill, capacity, 250-350 Kg/hr.	60-80.	• Easy in application.
		Isostatic Press, Fettling machine, Stacking equipment.	7-18	• Lower wastage.
			8-15	
		Fully automatic vertical copying m/c for Insulator.	45-60	• Lower pollution due to washing as all the washing may be easily collected where as in the ball mill the washing is left in the drainage.
		Roller Head machine for cup & saucer.	0.50-1.0	
		Pressure casting plant..	0.50-1	
		Piller Jolley	0.40-1	• To remove air pockets inside the body.
			31	
			16-25	

		Semi automatic Jigger Jolly. Universal jigger jolly. Humidity Driver Chamber. Glazing plant. Spray gun & compressor. Spray dryer plant Gas/Oil fired roller hearth kiln.	0.50-1 3-10 80-100 35-40	• Helpful to improve strength. • Reduce Breakage & Cracking. • Improve quality. • Reduce rejection & wastage. • Homogeneous pressing. • Defect free product. • Complicated shapes can be made. • No requirement of Plaster of Paris mould. • Higher strength and quality product. • Higher handling strength. • Low rejection and wastage. • Easy operation. • Suitable for long size Insulator. • Low wastage of material and time. • Higher strength. • Easy operation.

				• Quality product. • Low wastage. • Large Production. • Time saving. • Uniformity. • Thin & Thick Section. Tested technology, Indigenously developed, quality of tiles much better, less drying time, less warpage and breakage of tiles. • Homogeneous glazing. • Time saving. • Uniformity. • Thin & thick section. • Easy Operation. • Quality product. • Low Wastage. • Large Production. • Quality Product. • Lower breakage. • Easy handling. • Low wastage.

				• Time saving. • Uniform temperature distribution. • Fast production. • Low fuel consumption.
6.	Firing Section.	Gas/oil fired tunnel kiln. Gas/oil fired shuttle kiln. "Queen" Coal/ Wood fired pottery kiln. Temperature indicator (radiation type). Temperature Thermo couple & indicator. a. Refractory decker plat/kiln furniture etc for Tunnel Kiln. b. Shuttle Kiln. Auto On/ Off burner. Electric furnace, 1400°C, size 1 cft. Electric furnace /1600°C Gas fired 1600° C, 1 Cu. ft. Granulating machine Automatic Tile pressing unit Hydraulic / friction Press Generator Set of diff.	20-25 0.1 –0.25 2-4 0.10-0.30 8-20 3-8 3-5 2-4 17-25 5 -8 3 -5 20-25 2-4 1.50 -7 2 2-3 1.50 0.50-2.50	• Low rejection. • Easy operation. • Lower maintenance required. • Continuous type furnace. • Low pollution. • Energy efficient kiln. • Large production. • Batch type furnace. • Medium fuel consumption. • Easy operation. Queen pottery kiln sinters all kinds of pottery and terracotta at uniform temperature of 800 to 900 celsius using low grade coal or wood. It is low cost permanent structure kiln made

		capacity. Distill water plant. Control instruments for firing system. Instrument for routine test (Balance, B.D. Balance, hot plate sieves, viscometer etc.). Sanitary / drainage system in industry		of red brick and clay. • Accurate measurement. • Lead/wire less. • Can be used like torch for measurement of temperature. • No requirement for fixing the indicator. • Easy operation & maintenance. • Suitable for inside Temperature measurement. • Easy judgment. • Productivity increased. • Fuel consumption decreased • Long life. • Easy for loading of ware. • Easy in replacement of setting homogeneous heat flow. • Lower wastage of refractory material. • Lower fuel

				consumption. • Easy operation. • Reduction in pollution. • Suitable for testing of sample. • Quality control for body & glaze. • Measurement of firing range. • Testing of raw material & product. • Easy operation. • Lower pollution. • Easy operation for making of granules. • Higher production. • Homogeneous granules size. • Lower wastage. • Fast production. • Easy making of granules. • Quality granules product. • Easy operation. • Low wastage.

				• Time saving. • Lower wastage due to pre-checking. • Homogenous pressing. • Higher green strength. • Lower rejection. • Drying not required. • Back up power supply. • Quality product. • Lower wastage. • High production. • Time saving. • Better control over furnace performance. • Better quality control. • Better working environment.

Note : Price of the machines depend upon the quality, capacity, company, model etc. and also variable from time to time.

c). Interlocking pavement blocks and cement concrete blocks

S. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Interlocking pavement blocks	HDM-1000 DLX machine high density stationery type	6.60	

		interlocking block making machine with 4 nos. vibrators (5 hp each) hydraulic pump (5 hp) along with conveyor belt, penal board etc.		
2	Cement concrete blocks	a) 10/7 CFT capacity cement concrete mixture b) 75 kg capacity face mixture c) Earth compactor (2 Nos.) d) Block cutting machine (2 nos.) e) Pallet truck f) Laboratory equipment for in-house testing like measuring equipments, verniner, caliper, micrometer, screw gauges, compression testing machine	0.42 0.42 0.84 0.28 0.25 1.25	

d). Building Bricks – Clay & Flyash.

S. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Building bricks – Clay and Fly ash manufacture.	1. Vertical Shaft Brick Kiln (VSBK) 2 Shafts. 2. Jaw Crusher. 3. Auger Mill. 4. Pug Mill/Extruder. 5. Wire cutting table.	9 0.40 3 4.50 0.80 0.20	The building brick industry in the small scale is using traditional bull trench kiln and clamp kiln which are highly energy intensive and polluting, poor in providing uniform temperature and occupy lot of space.

		6. Shaping press		The Vertical Shaft Brick Kiln is highly energy efficient and consumes less than 50% fuel. Dried bricks can be fired and taken out in 24 hours. The land requirement for one kiln is only 2000 sq. meters. Jaw crusher is used for crushing coal to size 0-15 mm and also used for crushing large size clay bolder. It is essential for crushing the clay and also reducing the size of the coal for charging in the kiln. Mixing clay and other raw materials (waste material like fly ash etc.) intimately with clay to produce a homogeneous mass. The mixer from auger mill is passed on to pug mill for pugging and for mixing and extruding the material in required size. The equipment is used for cutting the extruded mass in to required length for thickness. The machine is used for repressing the wire cut clots in to required final size and shape.

xiii). Leather and Leather Products including Footwear and Garments.

a). Leather Products including Footwear and Garments.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
Designing Department.				
1.	Pattern Grading machine.	Mechanical pantograph/grading machine.	10 - 12	Faster and more accurate grading.
Cutting Department.				
1.	Clicking press of all types including traveling head/ sewing arm/ fixed head.	Hydraulic press of all types.	1 -7 depending on model and origin.	Accuracy and higher productivity will offset the cost.
2.	Cutting machine for textile.	Multi layer reciprocating knife textile cutting machine.	1	Very high production & productivity.
3.	Skiving.	Electronically/computerised controlled automatic skiving machine.	1	No need to adjust manually the types of skiving again and again. Very fast production with tremendous accuracy.
4.	Stamping.	All types of Automatic stamping & printing machine.	1-3	Clean, accurate & fast.
5.	Textile attaching.	a. Textile fusing press.	1-2	Gives control over the temperature and pressure at which the clothes are attached resulting in strong bonding and better quality.
		b. Latex spray booth.	1	Same as above

				but applicable to clothes which does not have self adhesion.
6.	Stitch Marking.	Automatic marking machine.	1	Faster production.
7.	Splitting,	Automatic band knife splitting machine.	2-5	Accurate and bulk production.
8.	Clicking board leveling.	Electronically controlled board leveling machine.	10-15	Accurate thickness increases the life of clicking dies and clicking machine head.
9.	Strap cutting.	Electrical machine for cutting and slanting straps.	1-2	Better utilisation of raw materials and faster production.
10.	Leather Weaving.	Electro-pneumatic weaving machine for leather.	3-6	For mass production of leather weaving.
11.	Embossing.	Automatic embossing machine.	3-4	For mass production.
12.	Strap folding .	Automatic strap folder.	1-3	Accurate mass production.
13.	Box stamping.	Box stamping machine.	0.50-1	For mass production.
Closing Department.				
1.	Conveyor.	F.O.F/F.O.O.	1-3	For better supervision / bulk production.
2.	All types of post, flat and cylindrical bed, single/double needle sewing machine for upper stitching.	Automatic/Computer controlled sewing machine.	0.05-3. depending upon origin and advancement.	Faster, uniform, accurate and easy operation.
3.	Hand stitching.	Automatic hand stitching/ apachi/ san-crispino and moccasin stitching machine.	10-12	High productive, less labour

				intensive and accurate production.
4.	Strobling.	Strobling machine.	2.50-4	Can eliminate lasting operation and gives very flexible shoe.
5.	Toe forming.	Automatic/Hydraulic/ pneumatic toe moulding machine.	1-4.50	Quality improvement and productivity enhancement is apparent.
6.	Toe-puff attaching.	Hydraulic/pneumatic automatic machine.	2-3	Faster production and less messy.
7.	Counter moulding machine with or without flanging.	Hydraulic/pneumatic automatic machine.	5-10	Faster production and less messy.
8.	Eyeleting.	Automatic eyeleting machine.	1-3	Faster and secured eyeleting.
9.	Folding machine with or without hammering attachment.	Automatic folding machine.	3-4	Very quick production. Less messy. Gives clean look.
10.	Upper / topline Hammering.	Automatic hammering machine.	2-3	Effective and uniform hammering improves the look of upper.
11.	Crimping.	Automatic crimping machine.	5-6	Quality improvement and faster production.
12.	Boot-leg ironing.	Automatic boot leg ironing machine.	4-5	Essential for bootie shoe. Improves the quality.
13.	Bar tacking.	Automatic bar tacking machine.	1.50-2	Clean and accurate operation.

				Faster and less messy.
Lasting & Finishing Department.				
1.	Forepart lasting machine.	Automatic toe lasting machine with or without micro-processor.	10-25	Most important machine for shoe making. Accurate, faster, and less spacey. Requires less people and also environment friendly.
2.	Combined Seat and side lasting .	Automatic seat & side lasting machine with or without microprocessor.	10-25	Most important machine for shoe making. Accurate, faster, and less spacey. Requires less people and also environment friendly.
3.	Side lasting machine of various types.	Automatic seat lasting machine both tack and combodian types.	3-7	Accurate, faster and less spacey. Requires less people and also environment friendly friendly.
4.	Heal seat lasting.	Automatic seat lasting machine.	4-8	Accurate, faster, and less spacey. Requires less people and also environment friendly.
5.	Pounding.	Automatic pounding machine.	3-5	Improves quality of the final products.

6.	Heel-Seat crowning.	Automatic crowning machine.	4-6	Improves quality of the final products.
7.	Forepart humidifier.	Automatic humidifier.	1-2	Far superior method, faster and restore the quality of leather.
8.	Backpart humidifier.	Automatic backpart humidifier.	1-2	Far superior method, faster and restore the quality of leather.
9.	Lasting conveyor.	Automatic running conveyor.	1-2	for faster production, better control
10.	Buffing.	Automatic Buffing & roughing machine with microprocessor control mechanism.	5-10	Precision buffing and faster production.
11.	Heat setter.	Heat setter with steam equipped with conveyor belt.	2-3	Correct heat setting, reduces the production time dramatically.
12.	Buffing and adhesive application.	Automatic combined rougher and cementer.	10-12	Both the operations are done by one machine, results in less messy and faster production. Also reduce the adhesive wastage.
13.	Last pulling machine.	Automatic last puller.	3-4	Reduces the damage during de-lasting of shoe. Increases the speed of production.
14.	Drying and reactivation.	Cement dryer & flash activator machine.	7-8	Reduce the space required

				of the workshop. Increases the production by several fold.
15.	Cementing machine for upper & sole.	Thermo cementing machine with or without brush.	7-8	Reduce the wastage of adhesive, accurate application.
16.	Chiller.	Chiller.	4-5	Increase the sole bonding. Reduce the sole delasting time.
17.	Side wall roughing.	Side wall roughing machine.	1-2	Accurately bond the sole with high side wall.
18.	Heel nailing .	Heel nailing machine.	7-8	Accurately nail the heel. Increases the quality of bonding.
19.	Mackey sole stitching.	Mackey sole stitcher	10-11	Faster production.
20.	Top line forming.	Top-line forming machine.	4-5	Correctly set the top-line. Increase the value of the final product.
21.	Adhesive re-activators.	Adhesive re-activators with time and temperature controller.	2-3	Precisely reactivates both the upper and sole. Sole bonding increases.
22.	Entire upper humidifier.	Steaming machine of the upper.	2-3	Humidifies entire upper. Enhance the speed of production.
23.	Performing.	Moccasin performing machine.	1-2	Humidifies and gives the shape of moccasin

				types of shoe. Enhance the quality and productivity of moccasin.
24.	Air blast dust removing.	Air blast removing machine.	1-1.50	Clean technology.
25.	Insole attaching.	Insole attaching machine.	1-1.50	Faster and accurate production.
26.	Insole covering.	Insole covering machine.	1-1.50	Faster and accurate production.
27.	Upper roughing.	Upper roughing machine.	1-20	Faster and accurate production.
Last & Other Components.				
1.	Chain slotting .	Chain slotting machine.	2-3	Add to the speed of production of last
2.	Rough turning machine for last.	Rough turning machine.	10-15	Increase the production of last
3.	Fine turning machine for last.	Fine turning machine.	10-15	Increase the production of last
4.	Roughing machine for plastic blocks.	Roughing machine for plastic blocks.	3-5	Increase the production of last
5.	Computerised last turning machine including software.	Last making CAD/CAM CNC controlled turning machine including designing and interface software.	30-40	Essential for last development, accurately copy of any last sampling. A major boon to new product development.
6.	CNC sole mould development.	Sole mould making software, CNC MILLING MACHINE with 3/5 Axis & EDM.	120-150	Essential for right quality sole mould.
7.	Insole moulding.	Automatic/hydraulic insole moulding machine.	2-3	Without this machine the moulding of

				insole can never be correct. Increase the rate of production.
8.	Edge beveling.	Automatic edge beveling machine.	3-4	Gives Accurate edge beveling. Also increase the pace of production.
9.	Shank attachment.	Automatic shank attacher.	10-15	Increases the accuracy and production tremendously.
10.	Automatic insole & shank pasting.	Conveyor assembly and automatic combined insole & shank attaching machine.	5-8	Clean production not to be mentioned that it increases the production by almost ten folds.
11.	Shank grooving.	Shank grooving machine	1-2	Increase the production and accurate grooving.
12.	Injection moulding for sole.	8/12/16/20/24/32 workstation injection moulding machine for PU/TPU/PVC/TPR/EVA.	15 - 300	Essential machine for huge production. Latest demand of the market. New breed of technology.
13.	Finishing.	Multi finisher.	2-4	Enhance the appeal of the shoe and in turn the salability.
14.	Spray booth.	Spray booth with spray gun	2-4	Enhance the appeal of the shoe and in turn the salability.
15.	Last finishing	Last finishing machine.	8-10	Accurately

				finish and polish the last. Production rate improves.
16.	Channel closing	Channel closing machine.	2-3	Automatically closer the sole channel. Improves the look and also enhance the production.
17.	Channeling and grooving.	Channeling machine.	2-3	Faster and accurate production. Uniform channeling.
18.	Coupling and edge pre-trimming.	Edge pre-trimming machine.	2-3	Accurate and clean production. Less time consuming
19.	Edge buffing .	Edge buffing machine.	1-2	Accurate and faster buffing.
20.	Edge inking.	Edge inking machine.	1-2	Clean and accurate production. Improves quality dramatically.
21.	Edge setting.	Edge setting machine.	1-2	Faster production. Also accurately sets the edge and thus improves the look.
22.	Edge trimming..	Edge trimming machine.	2-3	Accurate final trimming. Gives even and uniform look. Improves the quality.
23.	Heel attaching .	Heel attaching machine.	3-5	Faster production.
24.	Heel breast roughing.	Heel breast roughing machine.	3-5	Faster and accurate production.

25.	Heel breasting.	Heel breasting machine.	4-6	Faster production.
26.	Heel building.	Heel building machine.	3-5	Faster and accurate production.
27.	Heel covering .	Heel covering machine.	5-6	Faster and accurate production.
28.	Recessing and roughing of soles.	Recessing and roughing soles machine.	3-4	Faster production.
29.	Recessing welt.	Recessing welt machine.	3-4	Faster production.
30.	Sole stamping and embossing .	Sole stamping and embossing machine.	3-4	Faster production.
Standardisation Machine.				
1.	Testing & standardization.	Soling Abrasion Machine Complete.	3-10	Standardise the process/ product and materials used.
2.	Testing & standardization.	Drum Abrasion/Snag Tester.	3 -10	Standardise the process/ product and materials used.
3.	Testing & standardization.	Martindale Abrasion Machine.	3-10	Standardise the Process/ product and materials used.
4.	Testing & standardization.	Shoe Lace Abrasion Machine Lace to Eyelet.	3-10	Standardise the process/ product and materials used.
5.	Testing & standardization.	Shoe lace Abrasion Machine.	3-10	Standardise the process/ product and materials used.
6.	Testing & standardization.	Leather Soling Materials Abrasion Machine.	3-10	Standardise the process/ product and materials used.
7.	Testing &	Creep Cabinet/Adhesive	3-10	Standardise

	standardization.	Test.		the process/ product and materials used.
8.	Testing & standardization.	Dome Heat Reactivator.	3-10	Standardise the process/ product and materials used.
9.	Testing & standardization.	Compression Apparatus-Stress.	3-10	Standardise the process/ product and materials used.
10.	Testing & standardisation .	Dynamic compression Tester.	3-10	Standardise the process/ product and materials used.
11.	Testing & standardization.	Conductivitay Tester.	3-10	Standardise the process/ product and materials used
12.	Testing & standardization.	Thermal Conductivity-Less Disc.	3-10	Standardise the process/ product and materials used
13.	Testing & standardization.	State of Cure Apparatus.	3-10	Standardise the process/ product and materials used
14.	Testing & standardization.	Repeat Extension Set Apparatus.	3-10	Standardise the process/ product and materials used
15.	Testing & standardization.	Eyelet Security Test-PM 150.	3-10	Standardise the process/ product and materials used.
16.	Testing & standardization.	Slide Fastener Testing Machine.	3-10	Standardise the process/ product and materials used.
17.	Testing & standardization.	Velcro Closing Machine.	3-10	Standardise the process/

				product and materials used.
18.	Testing & standardization.	Crockometer.	3-10	Standardise the process/ product and materials used.
19.	Testing & standardization.	Rub Fastness Tester (Veslic).	3-10	Standardise the process/ product and materials used.
20.	Testing & standardization.	Rub Fastness Tester-Circular.	3-10	Standardise the process/ product and materials used.
21.	Testing & standardization.	Backpart Fatigue-M/S Type.	3-10	Standardise the process/ product and materials used.
22.	Testing & standardization.	Velcro Fatigue Tester.	3-10	Standardise the process/ product and materials used.
23.	Testing & standardization.	Shank Fatigue Tester.	3-10	Standardise the process/ product and materials used.
24.	Testing & standardization.	Universal Fatigue Flexing Machine.	3-10	Standardise the process/ product and materials used.
25.	Testing & standardization.	Finish Heat Resistance Tester.	3-10	Standardise the process/ product and materials used.
26.	Testing & standardization.	Bally Style Flexometer-NStn.	3-10	Standardise the process/ product and materials

				used.
27.	Testing & standardisation.	BATA Belt Flexing Machine.	3-10	Standardise the process/ product and materials used.
28.	Testing & standardization.	Fibreboard Flexing M/C-6 Stn	3-10	Standardise the process/ product and materials used.
29.	Testing & standardization.	Midsole Flexing Machine.	3-10	Standardise the process/ product and materials used.
30.	Testing & standardization.	Ross Flexing Machine.	3-10	Standardise the process/ product and materials used.
31.	Testing & standardization.	Rubber Material Flexing Machine.	3-10	Standardise the process/ product and materials used.
32.	Testing & standardization.	Upper Material Flexing M/C N stn	3-10	Standardise the process/ product and materials used.
33.	Testing & standardisation.	Whole Shoe Flexing Machine.	3-10	Standardise the process/ product and materials used.
34.	Testing & standardization.	Whole Sole Flexing Machine (PFI).	3-10	Standardise the process/ product and materials used.
35.	Testing & standardization.	Bally Style Flexometer-N stn.	3-10	Standardise the process/ product and materials used.
36.	Testing &	Ross Flex Machine in	3-10	Standardise

	standardization.	freezer.		the process/ product and materials used.
37.	Testing & standardization.	Bata Belt Flexing Machine.	3-10	Standardise the process/ product and materials used.
38.	Testing & standardization.	Sole Leather Grain Crack Test.	3-10	Standardise the process/ product and materials used.
39.	Testing & standardization.	Plastimeter Without Micrometer.	3-10	Standardise the process/ product and materials used.
40.	Testing & standardization.	Heel Impact Tester.	3-10	Standardise the process/ product and materials used.
41.	Testing & standardization.	Heel Fatigue Tester.	3-10	Standardise the process/ product and materials used.
42.	Testing & standardization.	Heel Pin Pull Out-PM96.	3-10	Standardise the process/ product and materials used.
43.	Testing & standardization.	Heel Pull-Off machine.	3-10	Standardise the process/ product and materials used.
44.	Testing & standardization.	Impact machine for Rigid Sole Unit.	3-10	Standardise the process/ product and materials used.
45.	Testing & standardization.	Digital lastomotor.	3-10	Standardise the process/ product and

				materials used.
46.	Testing & standardization.	Instant lastometer.	3-10	Standardise the process/ product and materials used.
47.	Testing & standardization.	Absorption of surface water.	3-10	Standardise the process/ product and materials used.
48.	Testing & standardization.	Permeability/absorption machine.	3-10	Standardise the process/ product and materials used.
49.	Testing & standardization.	Water vapour absorption tester.	3-10	Standardise the process/ product and materials used.
50.	Testing & standardization.	Water vapour permeatility.	3-10	Standardise the process/ product and materials used.
51.	Testing & standardization.	Break/pipiness scale & mandrel.	3-10	Standardise the process/ product and materials used.
52.	Testing & standardization.	Pressure measurement of presses.	3-10	Standardise the process/ product and materials used.
53.	Testing & standardization.	Cold conductivity of footwear.	3-10	Standardise the process/ product and materials used.
54.	Testing & standardization.	Heat conductivity of footwear.	3-10	Standardise the process/ product and materials used.

55.	Testing & standardization	Lacquer resistance test c/w Meter.	3-10	Standardise the process/ product and materials used.
56.	Testing & standardization.	Nail penetration apparatus.	3-10	Standardise the process/ product and materials used.
57.	Testing & standardization.	Safety footwear impact tester.	3-10	Standardise the process/ product and materials used.
58.	Testing & standardization.	Chisel scuff tester.	3-10	Standardise the process/ product and materials used.
59.	Testing & standardization.	Impact scuff tester.	3-10	Standardise the process/ product and materials used.
60.	Testing & standardization.	Seam durability testing machine.	3-10	Standardise the process/ product and materials used.
61.	Testing & standardization.	Shock absorption tester.	3-10	Standardise the process/ product and materials used.
62.	Testing & standardization.	Leather shrinkage apparatus.	3-10	Standardise the process/ product and materials used
63.	Testing & standardization.	Satra slip resistance tester.	3-10	Standardise the process/ product and materials used
64.	Testing & standardization.	Sole adhesion tester.	3-10	Standardise the process/ product and materials used

65.	Testing & standardization.	Heat resistance tester for sole.	3-10	Standardise the process/ product and materials used
66.	Testing & standardization.	Tensile tester.	3-10	Standardise the process/ product and materials used
67.	Testing & standardization.	Density determination balance.	3-10	Standardise the process/ product and materials used
68.	Testing & standardization.	Grey scale colour.	3-10	Standardise the process/ product and materials used
69.	Testing & standardization.	Grey scale staining.	3-10	Standardise the process/ product and materials used
70.	Testing & standardization.	Toe puff compression tester.	3-10	Standardise the process/ product and materials used
71.	Testing & standardization.	Toe puff dome formers.	3-10	Standardise the process/ product and materials used
72.	Testing & standardization.	Toe puff-toggle press.	3-10	Standardise the process/ product and materials used
73.	Testing & standardization.	Bally penetrometer.	3-10	Standardise the process/ product and materials used
74.	Testing & standardization.	Bally stiffness meter.	3-10	Standardise the process/ product and materials used
75.	Testing & standardization.	Maser with water detection.	3-10	Standardise the process/ product and materials used
76.	Testing & standardization.	Sole leather water penetration.	3-10	Standardise the process/ product and

				materials used
77.	Testing & standardization.	Wrinklometer.	3-10	Standardise the process/ product and materials used
78	Testing & standardization.	Laboratory Press for Adhesives.	3-10	Standardise the process/ product and materials used
79.	Testing & standardization.	Upper leather waterproofness test.	3-10	Standardise the process/ product and materials used

b). Items for Leather Industry:

S. No.	Activity	Technology Need	Cost (Rs in lakh)	Advantages
Pre-Tanning Section				
1.	Aluminum Drum.	Aluminum Drum of Different shapes and Dimensions.	1.50-10	Wood is becoming scarce and also chemicals leak.
2.	Fleshing machine.	Single/Double width fleshing machine.	10 – 15	Accuracy and higher productivity will offset the cost.
3.	Unhairing machine.	Single/double width unhairing machine.	10 - 15	Accuracy and higher productivity will offset the cost.
Tanning Section (Wet Blue & E.I.)				
1.	Splitting.	Double width through feed splitting machine.	15-35	Split the leather uniformly.
2.	Shaving.	Through feed double width machine.	20 – 25	Speed of production and final quality of leather improves.
3.	Setting.	Through feed double width machine.	20 – 25	Speed of production and final quality of leather improves.
Finishing Section				
1.	Vacuum Dryer.	Vacuum Dryer.	20 – 35	Uniform and quick drying. Improves the quality of leather.
2.	Toggling machine.	Toggling chamber with or without automation.	5 – 10	Quick production and also helps achieving uniform quality.
3.	Molissa type staking	Molissa staking machine.	10 – 15	For milder and uniform action. Also enhance

	machine.			the safety of workers.
4.	Buffing machine.	Combined Through feed single/double width buffing machine with dusting operation.	10 – 15	Accurate buffing action.
5.	Contilux.	Contilux.	15 – 20	Uniform and faster glazing
6.	Roto-Press.	Roto press and Roto Print.	25 – 30	Uniform pressing
7.	Hydraulic press.	Hydraulic Press with Automatic time and temperature controller..	15 – 20	
8.	Polishing.	Polishing machine	3 – 5	Uniform polishing
9.	Spray booth .	Auto Spray with Dryer	3 – 5	Uniform spraying & drying.
10.	Finiflex.	Finiflex.	10 – 25	Uniform effect.
11.	Curtain Coater.	Curtain Coater.	10 – 25	For patent & brush off leather
12	Roller coater.	Roller coater.	10 – 25	For patent & brush off leather.

xiv). Electronic equipment viz test, measuring and assembly/ manufacturing, Industrial process control; Analytical, Medical, Electronic Consumer & Communication equipment etc.

Sl. No.	Activity	Technology Need	Cost (Rs in lakh)	Advantages
1.	Testing & measurement.	Test & Measuring equipments, Oscilloscope/Digital Storage Oscilloscope, Spectrum analysers, Digital Multimeter High frequency counters & dedicated microprocessor based equipment/ software etc. Test Jigs & fixtures	Up to 15	Long term reliability, accuracy ensures product quality, consistency and improved productivity, product as per the national and international standards.

xv). Fans & Motors.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Manufacturing & Testing.	• Automatic coil winding machine. • Vacuum Impregnation	Up to 15	Material saving, Improved insulation, Improved performance and increased energy

		plant. • Hydraulic press for stacking and shaft fixing • Surface grinder for finishing the rotor • Dynamic balancing machine • Testing equipment as per BIS		efficiency.

xvi). General Light Service (GLS} Lamps.

Sl. No.	Activity	Technology Need	Cost(Rs. in lakh)	Advantage
1.	Manufacturing & Testing.	i) Exhaust tube (lead glass cutting machine). ii) Flare Machine (Score cut/hot cut). iii) Automatic stem making machine with annealing facilities. iv) Filament mounting machine. v) Sealing machine. vi) Vacuum and gas filling machine. vii) Capping machine and soldering machine. viii) Base Filling Machine (Fully automatic). ix) Cement Mixture machine with motor. x) Sleeve making	20 - 25	Improves productivity quality and better output.

		Machine with motor. xi) Packing Machine Automatic with one motor. (xii) Testing equipment as per BIS.		

xvii). Information Technology (Hardware).

Sl. No.	Activity	Technology Need	Cost (Rs in lakh)	Advantages
1.	IT Hardware.	Digital Storage Oscilloscope, Spectrum analyzers, Digital multi meters , Dedicated microprocessor based equipment/software, Test Jigs & Fixtures, Soldering Equipment.	25- 30	Long term reliability, accuracy ensures product quality, Consistency and improved productivity, product as per the national and international standards.

xviii). Mineral Filled Sheathed heating Element.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Manufacturing.	i) Automatic filling machine for MgO powder . ii) Swaging machine. iii)Thermostatically temperature controlled oven for annealing.	Up to 15.0	i)Increase in Insulation and dielectric properties. ii)Increase in life of the element. iii)Reduced rejection.

xix). Transformer/ Electrical Stampings/ Laminations/Coils/Chokes including Solenoid Coils, Assemblies.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Manufacuring &	i) Use of vacuum	Up to 10	Improvement in

	Testing.	impregnated plant, automatic/CNC coil winding machine, temperature control drying oven, CNC Winding machine, Cylindrical Grinding machine, Pulse welding machine, Digital Storage Oscilloscope & Solenoid Characteristic analyzer (PLC based) etc.		quality and reliability. Improvement in productivity. Product as per National/International Standards. Reduced rejection.
		(ii) Amorphous Metal Core Transformers (a) CNC Core Cutting Machine of high efficiency to cut brittle glassy metal of thickness less than 50 microns. (b) Annealing furnace having nitrogen atmosphere. (c) Testing equipments for testing electrical and magnetic losses, power supply etc.	34 28 5	Reduction in transmission loss of electrical energy. Reduction in electricity expenses, man-power reduction and accurate. To soften metals during working. Improvement in quality and reliability.
		iii) Electrical Stampings/ Laminations. Natural Gas based oven.	10	Reduction in no load losses, Increased efficiency of the end product material saving in rejection .

		or Microprocessor based Electric Furnace		

xx). Wires and Cable.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Manufacturing and Testing.	(i) Extruder with proper temperature control, pre-heating etc., speed control , spark tester for dielectric strength control, accurate dies and proper back up system. (ii) Testing and quality control equipments as per BIS mark.	25 10	Improved coating resulting in better insulation properties and meeting other quality parameters.

xxi). Auto parts and components including re-refining of Lubricating oils

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Testing.	Laboratory Testing equipment.: a) Metallurgical Microscope with image analyzer, photographic attachment. sample preparation machines. b) Stroh lien apparatus, Muffle furnace, hot plate, Glassware etc. c) U.T.S. Hardness Tester . d) Izod & Charpy Impact testing machine.	1.50 – 3.50 1 5 up to 0.75 up to 3 up to 1.50	Quality assurance &quality control, Defects analysis, process control, Greater market acceptability, quality check, meeting ISO certification requirement.

		e) Ultrasonic testing m/c . f) Manaflux testing m/c g) Spectrometer . h) Dimensional control equipments, surface plate for marking, Height gauge, Micro-meter, Verniers & Profile Projector. i) CNC operated Brake Shoe Dynamometer. j) Brake shoe Dynamometer.	12-20 0.50-2.50 7 As per prevalent market rates	A testing equipment to test the friction behaviour of disc brake pads/brake linings, while stimulating normal to extreme conditions on a braking system. Testing equipment for testing the friction behaviour of Disc brake pads/brake linings.
2.	Design & development.	Computers & CAD Software, Simulation software with Printers/Plotter.	1.50 - 15	Computerization of design & dev. to gain efficient & fast working, greater market acceptability, cost saving, quality assurance, process simulation.
3.	Manufacturing.	Productive Equipment : Gas fired/oil crucible melting furnace, Drop hammers, Stamping/Forging Presses, Electric furnace/Gas based reheating furnace, Band saw, Billet shear, CNC wire cut EDM, CNC Milling, CNC Lathe, Cylindrical grinding & Hobing machine, Tool grinder, Surface Grinder, Radial drill, Shaper/planner, Vertical turret boring machine, Special purpose component machining machine for high rate of	2.-50	Upgrading facility & Modernization on result and diversification towards forward & backward integration to gain efficiency & higher profit margin, Greater market acceptability, skill improvement and better working environment.

		production (SPM), Polishing & Coating machine, Heat treatment equipment, Gas fired/Electric furnace for annealing, normalizing, hardening, Tempering, Gas based Gen set.		
4.	In mould Label for Automobile industry technology.	1) High pressure forming machine, 2) High pressure compressor. 3) Injection moulding machine.	18.50 8 20	- To form foil of required shape in imd technique of decorating 3d surfaces. - To give 3d shape to the plain foil which requires 90vars to 300 vars. Quality products, avoid the use of adhesive tape for sticking the component, recycle level.
5.	Surface treatment.	a) Autophoretic Painting Plant.	46	Better paint durability, cost saving, consistency in quality, better productivity and eco-friendly process.
Re-refining of lubricating oil.				
6	Re-refining of lubricating oil. Testing and Quality control.	a) Falling film evaporation system. b) Wiped film evaporation system. Equipment for testing and quality control.	As per prevalent market rate. -do-	Eco-friendly technology. For enhanced quality control.

*** Cross references of technologies approved for Forging, Foundry and General Engineering Industry under the guidelines can be taken which are also applicable for Auto parts and components.**

xxii). Bicycles Parts.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakhs)	Advantages
1.	B.B. Axle, B.B. Cup, Pedal Axle, Pedal Cone, Hub Cups, Pedal Cups, Hub Cone, Nuts, Freewheel, Centre-Body, Head Ball Race, Fittings.	a) Production Machines & Equipments Cold Forging Plants and Forging/Forming Tools for B.B. Axle, Pedal Axle, Hub Cone, Head Ball Race Fittings, Pedal Cone, Five-Station Nut Formers, Knuckle Joint Presses, , Computerized Automatic Electroplating/Zinc Plants, Effluent Water Treatment Plant, Air Pollution Control Equipments etc. b) Tool Room Machines : CNC Wire Cut Machine, CNC Milling Machine, Hydraulic Surface Grinder, CNC/Precision Tool Room Lathe	5-55	Quality Improvement, Increased durability of the product, Higher productivity, Better working environment, Minimized air/Water pollution, Better Market acceptability.
2.	Front Fork, Frame, Handle.	a) Production Machines : Tube Swaging (Tapering Machine), Tube Butting Machine, Electric Resistance Brazing Machine, Cam Operated Profile MIG Welding Machine, Hydraulic Pipe Bending Machine, Hydraulic Fork Blade Bending Machine, Dip Brazing/ De-brassing Plant, Computerized Automatic Electroplating Plant, Powder Coating Plants, Electrostatic Disc or Bell Type Paint Plants for mass production, Gas/Electrically heated paint baking ovens including continuous line	5-55	Quality Improvement, Increased durability of the product, Higher productivity, Better working environment, Minimized air pollution, Better market acceptability.

		production ovens, Fork Truing & Straightening Machine, Impact Test (Frame and Fork Assembly falling Mass), Impact Test (Frame & Fork Assembly of Falling Assembly), Static Load Test on Frame with Pneumatic Cylinder, Front Fork Fatique test with Computer Interface, Handle fatique and Vibration testing equipment, Frame Dynamic Testing Machine. b) Tool Room machines: CNC Milling Machine, CNC/Precision Tool Room Lathe, CNC Wire Cut Machine, EDM (Spark Erosion machine), CAD/ CAM facilities.		
3.	Rims, Mudguards.	• Production Machines & Equipment : Simultaneous Rim hole punching Machine (Mechanical), Simultaneous Rim Hole Punching Machine (Hydraulic), Projection Computerized Electroplating Plant, Power Coating Plant, Electrostatic Disc or Bell Type Painting Plant for mass production, Gas/Electrically Operated Paint baking Ovens, Automatic rim making machine, profiling machine, Multi head Seam welding machine and Semi automatic flash welding machine. • Tool Room Machines :	5-55	Quality Improvement, Increased durability of the product, Higher productivity, Better working environment, Minimized air pollution, better market acceptability.

		CNC Wire Cutting Machine, CNC Milling Machine, CNC/ Pneumatic Tool Room Lathe, Spark Erosion Machine (EDM), CAD/CAM facilities etc.		
4.	Bicycle life Test, Fatigue Test, Gadgets/ Equipment.	All types of testing equipment for fatigue test, accelerated life testing as per IS/ISO/JIS/DIN/ BS/FR Standards.	1 -10	Quality Improvement, Increased durability of the product, Better market acceptability.

xxiii). Combustion Devices/Appliances.

xxiv). Forging & Hand Tools.

S. No.	Activity	Technology Need	Cost (Rs.in lakh)	Advantages
1.	Stock Cutting.	Automatic Band saw machine with indexing & circular sawing.	3-5 each.	Higher cutting accuracy, Preferred for Alloy steel cutting, Technologically recommended for upset forging
		Mechanical pneumatic clutch operated Crank type Billet shearing press	40-70 each	High productivity Low cutting loss.
2.	Material handling.	Fork lift. Overhead crane/swing frame crane. Automatic conveyor systems.	2-10 each	Quick & safe material & tools movement inside shop. Facilitate better house keeping. Clean work environment.
3.	Heating.	Oil/Gas fired energy efficient furnaces with recuperator & temperature controls.	2.50-5	Energy efficient. Consistent Quality. Eco-friendly.
		Continuous Electrical	10-30	Eco-friendly, Fast &

		billet heaters with temperature control .		uniform heating, less space requirement, automation possible.
4.	Forge shop.	Pneumatic double acting hammer.	30-80	High production rate, reduced maintenance cost
		High energy forging presses.	20-80	High production rate, Production of close tolerance forging, less skill requirement.
		Micro processor based, Energy controlled, pneumatic clutch operated, Screw friction presses.	10-30	High production rate, controlled blow pattern, low investment, less skill requirement.
		Knuckle joint presses.	10-25	Improved press stiffness, less space requirement, good off ualit loading capabilities.
		Cold and warm forging mechanical presses with eccentric drive.	25-80	Precision forging, complete automation, less tool changeover time, high productivity.
		Fully automatic electrical upsetter.	20-35	Suitable for high value items such as rear axle shaft, dead axle shaft, etc., high productivity, less skill requirement.
		Hydraulic double acting hammer.	50-100	Precision forging with high production rate & reduced maintenance cost.
		Modified Knuckle joint presses for cold/warm forging.	40-100	Precision forging with post forging operations minimized less raw material wastage, high production rate, automation feasible.
		Multi station horizontal formers.	40-100	Cold forging of socket wrenches, driving, accessories, screw driver blades with bolsters.

				Precision forging with post forging operations minimized, less raw material wastage, high production rate, automation feasible.
		Material gathering machines with electrical heaters.	5-20	To reduce the raw material wastage during manufacture of items such as wheel wrenches, extension bars, handles etc.
		Hot Shearing automats forging presses.	30-60	Microprocessor control, high productivity.
		Wide Ram Trimming, Presses.	10-20	Allows large ram area sustain high degree of off center loading, precision working.
		Reduce rolling machine.	5-15	Higher production rate, less skill requirement. Capable of making performs of various cross sectional areas and lengths, high productivity.
5.	Heat Treatment section.	Gas fired/High temperature furnace with automatic temperature controller & recorder.	2.50-5	Eco-friendly, reduced scale losses, facilitate automation, quality improvement.
		Fludised bed heat treatment line with controlled atmospheres and recuperators for preheating.	20-80	Eco friendly, highly energy efficient, requiring minimum time/energy to come on line. Flexible operations with adaptability to handle small batches, controlled atmosphere minimizing de-carburisation as well provides flexibility to carry out process such as carburizing,

				carbonitriding and cyaniding without use of polluting salts. No pre-cleaning/drying required, post treatment cleaning minimised.
		Medium Frequency Induction Heaters.	10-20	For controlled depth surface hardening of tools such as pipe wrenches jaws, hammers, pliers teeth etc. improved quality.
		Electrical resistance furnace.	2-5	Eco-friendly uniform heating, precise control.
		Forced air circulation furnace.	1-3	Uniform heating.
		Forced air low temperature furnace.	1-3	Requirement for tempering.
6.	Electroplating.	Electrostatic powder coating plant.	50	Automatic heating spray and coating chamber.
		Electro less plating equipment.	5-10	For improved flake less, hard and wear resistance coating.
		Manganese phosphating plant. Automatic Electroplating Plant. Vibrator/Barrels along with media.	2-10 90-200 10-15	A hydrogen embrittlement free process for providing a corrosion resistant black finish suitable for impact tools.
7.	Finishing & Cleaning.	Shot blasting machine.	3-5	Faster scale removal, Improve surface finish.
		Aluminium Oxide Grit Blasting Machine.	1-5	Hydrogen embrittlement free pre-cleaning process required before Mn. Phosphating of Impact Tools.
		Tumb blast machine.	As per the prevailing market rate.	Low cost, suitable for small forging, Improved surface finish.

8.	Quality Control & Testing.	Metallurgical Testing : Metallurgical Microscope with image analyzer, photographic attachment, sample preparation machines. a)Strohlien Apparatus, Muffle furnace, Hot plate, Glass ware etc. b) Universal Testing Machine. c) Spectrometer. d) Hardness tester. e) Izod & Charpy Impact testing machine. f)Ultrasonic testing machine. g)Magnetic particle testing m/c h) Tongue testing and life cycle testing equipment for hand tools	 1.50-3.50 1 upto 3 12-20 upto 1 upto 0.75 upto 3.00 upto 1.50 50-100	Quality assurance, Defect analysis, Diversification e.g. S.G. Iron production equipment essential to meet process control requirements. Quality control, Defect investigation, Quality assurance, Consistency in quality, Reduced defective casting, Cost control.
9.	Inspection.	Surface plate for marking, Height gauge, Micrometer, Vernier.	0.50	Quality assurance, Defect analysis.
10.	Design & Development.	Computers & CAD Software, simulation software with Printers/Plotter.	1.50-15	Computerization of design & development to gain efficient & fast working.
11.	Utility Section.	Gas fired generating set.	15-40	Eco-friendly, low power cost.
12.	Tool room.	CNC turning center.	10-20	Improved quality, high productivity, Precision machining, eco-friendly.
		CNC milling machine.	15-50	Improved quality, high productivity, Precision

				machining, eco-friendly.
		Electro Discharge machine (EDM).	3-8	Improved quality, high productivity, Precision machining, eco-friendly.
		CNC Wire cut machine.	10-20	Improved quality, high productivity, Precision machining, eco-friendly.
		Profile projector.	0.50-2	Easy to understand drawing and make modification.
		3 D co-ordinating machine.	2-5	Accurate dimensional inspection.
		Plastic Blow Moulding Machine.	25-75	For manufacturing tool kits.
		Fully Automatic CNC Injection Moulding machine.	15	Modern version , for making handle of srew drivers and sleeves of pliers.
		Special Purpose machines Welding Sets (for making special steel vices).	5-25	Special purpose.
		Special Purpose machines for Machining/ Grinding/Polishing/ finishing Spanner, Wrenches and other tools.	50-100	Special Purpose.
		Packing Machine.	25-50	For packing.

xv). Foundries – Steel and Cast Iron .

a). Foundries – Steel and Cast Iron.

Sl. No.	Activity	Technology Need	Cost (Rs in lakh)	Advantages
1.	Melting Section.	Divided blast cupola.	3-5	15 per cent coke saving, Better melt quality, Higher tapping temperature, Lower emissions, Reduced air pollution.
		Gas fired cupola.	12-15	Eco friendly, Higher tapping

				temperature, Better melt quality.
		Gas fired Pit furnace.	0.75-1.50	Eco friendly, Higher tapping temperature, Better melt quality.
		Oil fired rotary furnace.	37 (imported), 3 (indigenous)	Pollution control, Better quality product, cost effective.
		Induction Furnace with cooling tower & water treatment plant.	10 - 25	Flexibility to produce ferrous castings of all grades, Flexibility for charge mix selection, Best melt quality, Eco friendly.
		Induction ladle refining furnace.	30-40	Value added casting, eco friendly.
		D.C. Arc Furnace.	30-40	Special grade castings, eco friendly.
		Oil fired rotary furnace.	37.40 (imported). 30 indigenous.	It is proven technology, reduced air. pollution, better quality product, cost effective .
		Metal Refining Converter.	40	Value added castings, eco friendly.
		Skip charger for cupola.	Up o 1.50	Ease of charging, reduced labour cost, better control.
		Pouring/treatment ladles as per Indian standard 4475, 4476.	Up to 1	Quality assurance, increased safety for workmen.
2.	Utility Section	Gas based Generating set.	Up to 30	Reduced air pollution, energy saving.
3.	Quality Control Lab.	Metallurgical Testing: Metallurgical Microscope with image analyzer, photographic	1.50-10	Quality assurance, Defect analysis, Diversification e.g. SG Iron Production equipment essential to meet process

		attachment, sample preparation machines.		control requirements.
		Laboratory Testing / Quality Control equipment. Stroholien Apparatus, Muffle furnace, Hot Plate, Glass ware etc. U.T.S. Spectrometer / Mass Spectrometer. Hardness tester. e) Izod & Charpy Impact testing machine. Ultrasonic testing machine. g) Magnaflux testing machine.	1 Up to 3 15-25 Up to 1 Up to 0.75 Up to 3 Up to 1.50	Quality control, defect investigation, Quality assurance, Consistency in quality, Reduced defective casting, Cost control.
		Sand Testing equipment Moisture Teller, Universal Sand Strength testing machine, Sieve shaking device, Compactability scale, Rapid Moisture Teller, Permeability Meter, Mold Hardness Tester, Muffle furnace, Wash bottles, stirrer/Shaker, Hotplate, Vortex shaker, Centrifuge etc., Shatter index machine, Scratch Hardness Tester, Stick point, hot tensile,	2 to 8	Reduced defective casting, consistency in quality, Reduction in additives cost, Better as cast surface finish.

		peel back		
		Dimensional Inspection instruments: Surface plate for marking, Height gauge, Micrometer, Vernier, Profile projector with Digital Reading system, Dial & Micro snap gauges, Floating careage dia measuring machine, 3-Co-ordinate measuring machines.	Up to 10	Quality assurance, Defect analysis.
		Process Control Equipment: a) Carbon equivalent meter. b) Pyrometer (dip type immersion).	0.75-1.75 0.20	Consistency in quality, Reduced defective casting, Cost saving.
4.	Design & Development	Computers & CAD Software's, simulation software with Printers/Plotter.	1.50 - 15	Computerisation of design & development to gain efficient & fast working.
5.	Molding/Core.	Intensive mixers.	2.50 - 5	Reduced defective casting, Better as cast surface finish, Reduction in additive cost, Reduced air pollution.
		Simultaneous Jolt/Squeeze moulding machine.	3-10	Higher productivity, dimensional accuracy, less skill requirement.
		Shell Moulding Machine.	3-5	Higher productivity, dimensional accuracy, less skill requirement.
		Centrifugal casting machine.	1.50-3.50	Liner castings exclusive process, eco-friendly.

		Spun pipe casting machine.	up to 40	Export potential, higher productivity, eco friendly.
6	Investment Casting	Wax Injection Machines.	up to 10	Requirement for modern investment casting process.
		Sand Raining Machine.	up to 4	Requirement for modern investment casting process.
		Slurry Mixtures.	Up to 2	Requirement for modern investment casting process.
		Dewaxing Oven.	Up to 2	Requirement for modern investment casting process.
		Burt out furnace.	Up to 2	Requirement for modern investment casting process.
		Belt Polishless.	Up to 1	Requirement for modern investment casting process.
		Sand reclamation system.	Up to 20	Cost saving, pollution control, reduced binders composition.
		Continuous mixer for no bake sand.	Up to 15	Reduced additive cost, Quality improvement, Pollution control, Improved quality.
		Shot blasting machine.	Up to 8	Better surface finish & Quality improvement
		CO 2 Gassing machine.	Up to 0.50	Cost saving, pollution control, Quality improvement.
		Moulding boxes as per Indian Standard 1280 & 10518.	Up to 3	Better dimensional accuracy, higher productivity
		Core shooter-shell or no bake sand.	2 - 5	Higher Productivity, Consistency in quality, Narrower as cast dimensions, Excellent finish.
7.	Heat Treatment Section.	Induction Hardening	10 - 15	Higher Productivity, Consistency in

		Equipment 100 KW, 500Hz to 3KHz. Removable Hearth type chamber F/C upto 1200 C moving with computer compatible temp. controller. Handling equipment-overhead crane- 2 ton capacity. Quenching. Water quenching tank-with Heat exchanger unit. ii. Oil Quenching tank-fitted with oil heating & heat exchanger to obtain desired & cooling rates for hardening. iii. Air quenching fans.	3 – 5 1-3 0.75 1.50 0.30	quality, eco friendly. Cost saving, Consistency in quality, Better productivity. Reduced labour cost, Higher Productivity, Consistency in quality. Process requirement to achieve quality. Process requirement to achieve quality. Process requirement to achieve quality.
8.	Machine Shop.	CNC Milling machine. CNC Lathe Machine. Capstan lathe/Turret lathe. Radial Drill. Planner. Shaper. Jig Boring Machine. Hydraulic Hooning machine.	25-30 10-15 up to 3 up to 5 up to 3 up to 3 up to 5 up to 3	Higher productivity, dimensional accuracy, less skill requirement, Consistency in quality.

9.	Pattern Shop.	CNC Milling. Pentograph. Drilling. Disc and bobino sand grinder.	30-50 Up to 2 Up to 1.00 Up to 3	Higher Productivity, Consistency in quality, Narrower as cast dimensions, Excellent finish, Better productivity.
10.	Fettling Section.	Shot Blasing Machine. Pedestal Grinder. Swing Frame Grinder. Painting Booth.	up to 5 up to 0.50 up to 0.25 up to 0.50	Higher Productivity, Process requirement to achieve quality.

Pollution Control.

S. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Pollution Control	Wet Scrubber, Cyclone, Ventury Scrubber, Bag Filter.	Variable up to 15	Reduction of suspended particulate matter (SPM) emissions.

b). Foundry chemicals.

S. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Resin.	Stainless steel kettle or reactor complete plant assembly.	25	By using SS reactor vessel replacing Mildseel vessel eliminates iron content from resin improving quality of resin eliminating casting defects due to iron content in the resin which results into surface defects, blow holes, pin holes. It will improve productivity, quality of product and work environment in the unit.

		Thermic Oil Heating System, 3000 Kcal/hr.	4	It saves energy considerably and is absolutely environmental friendly and there is no pollution.
2	Exothermic/insulating Sleeves.	Oven for Baking Sleeves, Molding Machines, Vacuum system.	25	It reduces requirement of molten metal for risers thus increasing yield of castings to the level of sometimes more than 20%. Highly energy saving, cost reduction system thus improving productivity.

xxvi). General Engineering Works.

S. No.	Activity	Technology Need	Cost (Rs.in lakh)	Advantages
1.	General Engineering for Multiple use:-	General Engineering Works for Multiple Use. CNC wire cut machine, EDM, CNC lathe along with rotary table attachment, CNC milling, CNC drilling machine etc.	5 - 55	Modernisation and results in efficiency gain, greater market acceptability, skill improvement and better, working environment.
	Hand tools, Surgical equipment, Bicycle parts, Auto parts, Machine tools. Precision machined parts.	b) Inverter based Welding Machine.	Prevailing market price.	Better design, faster response time, extremely low ripple, smaller in size & lighter in weight hence portable, more efficient during welding, better weld quality and energy efficient operation.
2.	Heat treatment.	Induction furnaces, Gas Carborizing furnace, QC & Testing equipments such as	up to 30	Enhancement of mechanical properties.

		Vickers hardness testing equipment etc.		
3	Skill upgradation.	Modern software driven equipments such as CNC trainer mill, CAD/CAM software and modern audio visual equipment.	Up to 40	

xxvii). Gold Plating Industry and jewellery.

a)Gold Plating Industry and jewellery.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Automatic plating operation.	Automatic Electroplating unit.	2–5	Increased production in conditions safe for handling and better control of quality.
1.	Power supply.	Pulse Rectifier.	1- 2	Better Quality in plating.
3.	Polishing.	Polishing machine.	0.50	Better finish after plating.
4.	Cleaning before plating.	Ultrasonic cleaner.	1	For effective cleaning of intricate surfaces.
5.	Demineralising.	Demineraliser or Deioniser unit.	0.50	For preparation of plating solutions of better standard.
6.	Lacquering Unit.	Electrophoretic Lacquering Unit.	4	For increased life of plated product.
7.	Baking.	Oven with temperature control.	0.50	For increased life of plated product.
b) Gold melting and refining.				
1.	Gold melting.	a)Induction Melting furnace with Crucible. b)Gas fired melting furnace with crucible.	5 8	Pollution free, quicker time, Reduced Melting losses, reduced consumption of energy/unit wt. of melting highest quality Flexibility of handling different sizes of crucibles, less fuel cost/unit wt. of melting & highest

				quality
2.	Gold refining.	High quality Borosilicate glass reaction Vessel, non-rusting non corrosive fitting and joints double fume condensation columns & scrubber highly efficient for absorbing reaction gases, automatic charging of acid facility.	49	More superior than existing plant with highest possible recovery of gold/totally environmental friendly meeting standards.
3.	Scrubbing & filtration.	High Power water jet vacuum pump specially built for chemical plants with security valves etc.	3.50	High capacity vacuum and water jet pumps for faster and efficient water circulation for heat transfer and acid fume neutralization, reduced pollution free air from scrubber.
4.	Recovery of bye-products.	Electrolytic silver refining plant complete with stabilized power, power current rectifier, anode preparation moulds, Hot air drying and washing centrifuge and accessories & wheeled filtering unit. Electrolytic silver refining tank, recycling tank for silver solution with pumps.	8 12	Recovery of High Purity Bye Products, environment friendly, pollution & dust free.
5.	Drying.	Thermostatic stove dryer for Gold grains powder crystals.	4	Reduces losses due to evaporation, reduces melting losses and hazards, removes unwanted volatile matters.
6.	Filtration & Demineralisation.	Dual column automatic water demineralisers with holding metallic	2	In house quality control on desired purity necessary to wash refined Gold for

		structure and inlet filters.		maintaining desired purity.
7.	Precipitation / Reduction.	Storage & sedimentation tanks for gold chloride solution coming from Aquaregia gold refining plant after gold Precipitation.	3	Totally Pollution free no evaporation of gold chloride solution, reduces losses of fine gold/particles.
8.	Flue gas outlets.	Plenum Chamber complete with hopper & flanged connection for pipelines	2.50	Sucks heat fumes & fine particles of gold reduces temperature in melting area & improves work environment.
9.	Fume Particles recovery plant for melting.	Steel cyclone for washing & recovery of fume particles coming from melting furnaces.	3.50	Preventing precious metal losses improving profitability.

xxviii). Locks.

Sl. No.	Activity	Technology need	Cost (Rs. in lakh)	Advantages
1.	Locks-Lever type & Pin cylinder type.	Three Axis CNC Drilling Machine for Multiple Drilling in Brass Body/ Tumbler.	11.25	Enhance and consistent quality, improves productivity.
		Three Axis-CNC Key Indentor for Dimple Type keys.	12.75	
		Automatic Key Serial number Stamping Machine- Hydro-Pneumatic.	3	
		Pin Making Machine - Automatic Pin Cutting.	6.50	
		Broaching Machine - Semi Automatic plug keyway broaching Machine with Auto loading.	12.50	
		Key Slotting Machine -	6	

		Auto Key camshaft side milling Machine for Keyway Milling.		
		Key Biting Machine - Key Biting Face Milling Machine.	9	
		Automatic Cutting Machine for Lock Body.	5	These automatic machines are designed for assembly of pin-tumblers, constant length drivers and spring into lock cylinders, and then seal the cylinder.
		3-Spindle Automatic Drilling Machine for Lock Body.	21	
		Automatic Drilling & Tapping Machine for Lock Body.	21	
		Automatic Pin-Hole Drilling Machine for Lock Body.	14.50	
		Automatic Pin-Hole Drilling Machine for Plug.	10	
		Automatic Drilling & Milling Machine for Plug-End.	9.50	

xxix). Steel furniture.

S. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Manufacturing.	Electrostatic Powder Coating equipment along with pre treatment tanks and curing chamber.	Up to 20	i)Quality improvement. ii)Reduction in material wastage (Paint) thus reduced cost.

xxx). Toys.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Toys-Soft toys.	Garnetting Machine.	3.50	Avoids bunching of the fiber fill, increases fluffiness and softer feel.
		2) Metal Detector-	3.50	Assists in detecting ferrous/non-ferrous

		Tunnel type with conveyor belt Detection-Ferrous 1.5mm, Non-ferrous-2.0mm.		parts specially broken needles from soft toys.
		3) Hydraulic Gear/Press cutting machine Automatic / Semi automatic type.	5.50	Can cut upto 6 layers of fur fabric and 30-50 layers of velour fabric.
		4) Sewing machines Type – Single needle lockstitch machine, medium to heavy type fabrics.	0.12~ 0.18	
		4) Stuffing machines.	Approx. 0.70 for a single point machine to 1.25 for a double point machine.	To increase speed and consistency of stuffing in a toy, a stuffing machine is used. In this the carded/opened PSF is filled using blowers.
2.	Plastic Moulded / extruded products & parts / components including toys.	1) CNC Milling Machine.	18 –33	Improves productivity, quality and reduces time in manufacture of dies & moulds.
		2) CNC Wirecut Machine.	8	
		3) Electric Discharge Machine.	10	
		4) CAD/CAM Software **:** Scanner / Digitiser	10	
3	Making of Board Games, puzzles and educational games.	From manual to automatic operation	15- 20 for indigenous machine.	A proven technology ensures product quality, consistency, cost effiectiveness and productivity enhancement.

xxxi). Non-ferrous foundries.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Meeting & Casting section.	i) Oil fired pit furnace/LPG or CNG fired pit furnace.	0.75 to	Eco-friendly, higher tapping, temperature

			2	better melt quality, lower melting losses.
		ii) Mobile de-gassing unit.	up to 15	Faster degassing of molten metal, process requirement.
		iii) Pressure die casting machine(Hot/cold chamber).	15- 80	i) Faster production rate.
		v) Dip type temp. indicator.	0.20 to 0.25	ii) High dimensional accuracy.
				i) Liquid metal temperature can be measured quickly.
		v) Pouring ladles as Indian Standard 4475- 4476	up to 0.50	ii) Better control on pouring temperature.
				Quality assurance, increased safety for workmen.
2	Quality control Lab.	i) Thermal analyzer for Aluminum.	4 - 10	Quality assurance, essential to
		ii) Electrolytic analyzer.	2 - 10	meet process control requirement.
		iii) Met Microscope with image analyzer, photograph attachment sample preparation machine	4 - 10	Quality control, defect investigation,
		iv) Ultrasonic testing machine.	15 - 25	Quality assurance, Consistency in quality Reduced defective casting, cost control.
		v) Radiography testing machine		
		vi) Spectrometer		
3	Utility Section.	i) Gas fired Gen-set.	10 - 20	Reduced air pollution, energy saving.
4	Heat Treatment Section.	i) Forced Air Circulation electric furnace.	3 -10	Eco-friendly, energy saving furnaces.
		ii) Low temperature electric	0.50 - 1	Process requirement to achieve quality

		furnace. iii) Quenching-water Quenching tank with heat exchanger unit. iv) Material handling equipment. v) Sand testing machine.	1.-3 3 -5	safety to workmen Higher productivity, process requirement to achieve quality.
5	Design & development Section.	Dimensional inspection instruments. Surface plate for marking, Height gauge, Micrometer, Vernier, Profile projector with Digital Reading system, Dial & Micro snap gauges, Floating careage dia measuring machines, 3 coordinate measuring machines. Computers & CAD software's simulation software with Printers/Plotter	up to 10	Quality assurance, Defect analysis. Computerization of design& development to gain efficient & fast working.
6	Machine/Die shop	CNC Milling machine CNC Lathe machine. Capstan lathe/Turret lathe. Radial Drill. Planner. Shaper. Jig Boring machine. Hydraulically Honing machine.	25-3 10-14 3. up to 5 up to 3 up to 3 up to 5 up to 3	Higher productivity, dimensional Accuracy, less skill requirement, consistency in quality.
7	Pattern Shop.	CNC Milling. Pantograph.	30 50 up to 2	Higher productivity, consistency in quality, narrower as cast dimensions.

		Drilling machine. Disc and bo bino sand grinder.	up to 1 up to 3	excellent finish, better productivity.
8	Cleaning & Fettling Section.	i) Grit blasting machine ii) Pedestal Grinder iii) Belt Grinder iv) Painting Booth v) Acid Pickling & cleaning plant	up to 5 up to 0.50 up to 0.50 up to 0.50 1 -3	Higher productivity, Process requirement to achieve quality.

xxxii). Sports Goods.

a). Sports Goods.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakhs)	Advantages
1	General stitching finishing purpose	Auto drive conveyors in finishing, stitching & packing	1.70 conveyor for finishing.	For uniform material movement without personnel involvement
2	For packaging & wrapping of smaller components.	Auto puch & shrink packaging machines for football, tennis ball, hockey balls.	0.70 conveyor for packaging.	Electronically controlled system for uniform & faster output of packaging.
3	Printing of all sports goods and balls.	1.Conveyors for material traveling and drying at controlled temp and speeds. 2. Automated pad printing on balls and other components. 3. Thermal & foil transfer printing (PLC controlled & automated).	0.70 conveyor basic type. 4.50 per single head with full automation 1.20 per single platform with pneumatic automation.	Man power saving with uniform quality output. Improved technology For printing than conventional manual printing with better productivity. New concept to match the final

		4. Pneumatic embossing machines.	1.20 per single platform with pneumatic automation .	goods with international style. New technology of printing than conventional manual printing with better productivity.
4	Leg guards, gloves & other sports protective gears	1. Mechanized & specialized single & double needled stitching machines for leg guards & mat	0.40 per single needle machine 1.60 per double needled machine	Uniform stitch density, Higher production. More Versatility on new machines. Safer than conventional
		1. Electronic fabric cutting machine for artificial leather. PVC, PU, cotton and polyester fabrics	0.03 basic handy automatic cutter	Higher output, lower rejection. No skill required.
		1. Hydraulic checkers for PVC leather, rubber sheets for foot balls etc. instead of hand cutting for mechanical power cutters.	1.50 to 2 per machine depends on the area size of the head	Material saving, Lower down time, Non skilled labour required .
5.	For balls	1. Thermal welding machines as per latest technology of balls. 2. Single needled stitching machines for ball stitching.	New techno-logy, can vary from 1.50 to 3 for PLC type machine 1.50 per machine(heavy durty)	Latest technology in ball Making. Latest technology with more productive method per man in ball stitching.

6	For moulds & dies	1. CNC machines for in house die making & repairing for balls etc. 2. Imported CNC dies & o moulds	10 to 12 for milling type with 3 axis machine for in house working mould cost for balls 25000/set 0.75 to 1 for plastic leg guards moulds.	Accurate moulds & dies as per international trends & wider acceptability.
7	Carton packaging	1.Stitching machines for packaging 2. Automatic strapping machines	2 to 1.50 depends on carton size.	Time saving packaging technique.

b). Rubber, leather, plastic based sports goods

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Rubber, Leather Plastic based Sports goods.	1. Tensile Testing Machine (Indian)	0.50 to 10	Testing of raw material /product. -Better Quality Control. -Quality pgradation/Improvement. -Indirect contribution in boosting exports.
		2. Rheometer(Indian)	0.50	
		3.Din Abrasion Tester (Indian)	0.30	
		4. Ross type Flex Tester (Indian)	0.30	
		5. Hot Air Oven (Indian)	0.15	
		6. Leather Colour Fastness Tester	0.90	
		7.Mini Flexometer	0.75	
		8.Martindale Abrasion Tester (Leather)	1	

		9. Shooting Apparatus Foot Ball Testing (Indian) 10. Water-Uptake-Tester Foot Ball Testing (Indian)	2.50 0.75	
2	Rubber based Sports goods.	1. Rubber compounding Kneeder.	2.50 - 4	Higher productivity. Better quality of product.
		2. Rubber Injection Moulding machine.	4 - 10	
		3. PID Temperature controlled Hydraulic compression Press.	1 - 2	
		4. Thermal Fluid/Petroleum fuel boiler	2.50 - 5	To ensure cleaner environment.
3	Cricket Ball	1. Cricket Ball Panel Angle Cutting Machine	1	More production 2 or 3 times; Repeatability; Low cost of production; No trained man power required;
4	Protective equipment for Cricket and Hockey	1. Foam, Leather & Cloth etc. Cutting Clicking Machine	2	-Low cost of production. -High production (10 times). -No damage of dies. -No trained man power required.
5	Wood based Sports goods	1. Crack detector (Ultrasonic)	1 - 1.50	1. Better quality product.

				2. Better quality control. 3. Higher productivity. 4. Contribution in boosting export.
		2. Moisture Meter	0.05	
		3. Glass Tester for finish	0.05	
		4. Wood hardness tester	5	
		5. Wood Seasoning Plant (Non Steam)	6.50	
		6. Pressure Sensitive Hydraulic Cricket Bat Pressing Machine	-	
		7. Semi Auto Lacquering Plant	1.50 - 2	
		8. Wood Boiling Plant		
		9. Wood Engraving Pantograph	1 - 2	
		10. Copying Lathe	1.50 - 3	
6.	Leather based sports goods	1. Auto spray coating machine (Italian)	20 -25	1. Maximum production 5 to 6 times repeatability.
		2. Roller Coaster machine (Italian)	15 - 20	2. Maximum output 5 to 6 times repeatability.
		3. Auto Toggling machine (Italian)	30 - 40	3. Low cost of production.
		4. Vacuum Drying Machine (Incoma Italian)	25 - 35	4. Better quality of production.
				5.Upgradation /Improvement.
				6. Better quality control.
				7. Higher productivity.
				8. Contribution in boosting export.

xxxiii). Cosmetics

xxxiv). Readymade Garments:

a). For Knitting

Sl. No.	Activity	Technology Need	Cost (Rs in lakh)	Advantages
1	Mfg. of Knitted fabric	High speed circular knitting machine with a minimum speed of 23 revolutions per minutes.	20 - 50	Improvement in quality and efficiency.
	Mfg. of knitted Seamless garment	Computerised seamless garment knitting machine and Gloves knitting machine different size and gauge for under & outer garment (New Technology)	20 - 65	-do-
	Mfg. of knitted socks and gloves	High speed socks knitting machine and Gloves knitting machine with or without electronic jacquard.	3 - 7	-do-
	Mfg. of Knitted fabric and garment panel	Computerized flat bed knitting machine with minimum speed of 11 revolutions per minute.	45 - 75	-do-
	Mfg. of Knitted fabric	• Warp/Raschel knitting machine • High speed computerized warping M/c for knitting	20 - 35 45 -75	-do-
	Manufacture of Label	Computerizes label making machine	10 - 18	-do-
	Mfg. of Knitted fabric	Circular knitting machine of different size and gauge	2 - 4	-do-
2	Controlling relative humidity	Modern industrial humidification system for controlling relative humidity & temperature.	5 - 8	-do-

b). For stitching of knitted/Woven RMG & Made ups:

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Garment Mfg. activity	Single/multi needle power operated industrial lockstitch sewing machine with or without trimmer overedging/seaming and banding operation	0.15 -10	Improvement in quality and efficiency.
2	-do-	Blind stitch machine /Chain stitching machine		Do
3	-do-	Power operated linking/loop making sewing Machine		Do
4	-do-	Power operated flat lock/overlock Machine		do

5	-do-	Zigzag flat bed sewing machine		do
6	-do-	Button stitch sewing machine		do
7	-do-	Label/elastic inserting machine		do
8	-do-	Button hole sewing machine		do
9	-do-	Belt attaching machine		do
10	-do-	Zip attaching machine		do
11	-do-	Bar tacking machine		do
12	-do-	Hemstitch machine		do
13	-do-	Smocking M/c. Automatic multi needle shirring machine		do
14	-do-	Pattern maker/grader/marker machine /laser marker		do
15	-do-	Power driven cloth cutting machine/laser fabric of label cutting machine		do
16	-do-	Band knife-cutting machine		do
17	-do-	Collar and cuff turning and blocking machine and pressing machine		do
18	-do-	Pocket creasing and welding machine/Auto pocket making machine		do
19	-do-	Industrial steam iron with vacuum table and/or buck press		do
20	-do-	Boiler for steam press/vacuum press, Steam cabinet/ vacuum press, Steam cabinet/vacuum table		do
21	-do-	Button and revet/snap fasteners fixing machine		do
22	-do-	Fusing press		do
23	-do-	Collar contour trimmer		do
24	-do-	Automatic spreading & cutting table with vacuum and/or air blowing device		do
25	-do-	Shoulder pad-attaching machine		do
26	-do-	Pocket cutting machine		do
27	-do-	Computerised CAD/CAM/cutting machine		do
28	-do-	Round knife cutting machine		do
29	-do-	End cutter with cloth press track		-do-
30	-do-	Cloth drilling machine		-do-
31	-do-	Collar point trimmer/gear knotcher machine		-do-
32	-do-	High speed fully fashioned knitting machine		-do-
33	-do-	Whole garment making M/c for knitting garment or power operated garment panel forming knitting		-do-

		machine with linking machine		
34	-do-	Power driven socks and gloves knitting machine		-do-
35	-do-	Automatic thread trimming/sucking machine		-do-
36	-do-	Shirt folding machine		-do-
37	-do-	Stain/spot removing machine		-do-
38	-do-	Pear/Beads/Sones/Glassete/Hook and Bar attaching machine		-do-
39	-do-	Quilting machine		-do-
40	-do-	Fabric inspection/checking machine		-do-
41	-do-	Needle/Metal detector machine		-do-
42	-do-	Multi bead computerized embroidery machine		-do-
43	-do-	CAD/CAM pattern maker with plotter and software including software equipment for embroidery machine		-do-
44	-do-	Computerised Label making machine / Computerised Label printing machine		-do-
45	-do-	Button wrapping/shanking machine		-do-
46	-do-	Feed –off-the arm industrial sewing machine		-do-
47	-do-	Automatic dart/pleat making machine		-do-
48	-do-	Automatic label/ply picking machine		-do-
49	-do-	Pin tucking machine		-do-
50	-do-	Mechanised fabric pinning table		-do-
51	-do-	Single needle basting M/c		-do-
52	-do-	Single needle post bed sleeve setting machine		-do-
53	-do-	Hanging production conveyor system		-do-
54	-do-	Crochet machine for laces and bands with electronic bar operation		-do-
55	-do-	Shring thrusting M/c		-do-
56	-do-	Plastic staple attacher		-do-
57	-do-	Sand Blasting/Brushing machine		-do-
58	-do-	Colour matching machine		-do-
59	-do-	Automatic machine for making knit shirt center plaits		-do-
60	-do-	Belt loop attaching machine		-do-
61	-do-	Button Packer		-do-
62	-do-	Collar Heat Notcher		-do-
63	-do-	Spot welding machine		-do-

c). For knit & Woven Process House (Fabric/Garment/Made Up):

Wet processing

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Dyeing activity	Wet fabric spreading and squeezing machine	0.25-100	Improvement in quality and efficiency.
2	-do-	Knit tubular mercerizing or bleaching cum mercerizing machine		-do-
3	-do-	Knit fabric continuous bleaching plant		-do-
4	-do-	Soft flow dyeing machine		-do-
5	-do-	Jet dyeing machine		-do-
6	-do-	Cabinet type hank yank dyeing machine		-do-
7	-do-	Printing/curing machine for garments		-do-
8	-do-	Automatic flat bed screen printing machine Rotary screen printing machine		-do-
9	-do-	Ink jet printing machine		-do-
10	-do-	Star Ager/pressure ager/loop ager/steam ager		-do-
11	-do-	Roller steamer/Polymeriser		-do-
12	-do-	Washing range with arrangement of tension free fabric drying and reduced water consumption/water reuse system		-do-
13	-do-	Hydro extractor		-do-
14	-do-	Industrial garment washing/drying machine		-do-
15	-do-	Tumble dryer		-do-
16	-do-	Rope opening Line with open width squeeze mangle for knitted fabric		-do-

Wet Finishing Machines:

Sl.	Activity	Technology Need	Cost	Advantages

No.			(Rs. in lakh)	
1	Finishing	Multi chamber stenter (minimum 4 chambers) with arrangement of oil/gas heating	1-50	Improvement in quality and efficiency.
2	-do-	Radio frequency/infrared radiant gas fired/micro wave/loop/relax dryer		-do-
3	-do-	Form finisher		-do-
4	-do-	Sue ding machine		-do-
5	-do-	Precision flock cutting machine		-do-
6	-do-	Sieving machine		-do-

Dry processing/Finishing Machines:

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Processing/Finishing	Fabric reversing machine	0.50 - 20	Improvement in quality and efficiency.
2	-do-	Slit opening machine		-do-
3	-do-	Pile cutting machine		-do-
4	-do-	Singeing machine for tubular fabric		-do-
5	-do-	Dry to dry cleaning machine		-do-
6	-do-	Compacting machine		-do-
7	-do-	Curing/Polymerising machine		-do-
8	-do-	Coating/Laminating/Embossing machine		-do-
9	-do-	Computer controlled fabric inspection machine /Fault analyzer/Report generator		-do-

Effluent Treatment plant:

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Effluent water treatment	Effluent Treatment plant with primary secondary and/or tertiary treatment facilities (for unit linked to common effluent treatment plant with	5 - 25	To save the environment.

		primary treatment system		

Utilities and Others

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Steam heating system	Oil fired boiler, coal fired boiled with pneumatically controlled filter mechanism electrostatic precipitator and micro dust collector	2-15	Improvement in quality and efficiency.
2	-do-	Thermo Pac/Other high temperature heating system		-do-
3	Goods packing	Automatic packing machine		-do-
4	Weighing and dispensing	Automatic dye weighing and dispensing system		-do-
5	Colour matching	Computer Colour matching		-do-
6	Quality testing	Light fastness tester		-do-
7		Thin hydro carbon vapors recovery plant for textile printing		-do-
8	Power generation	Diesel Gen set (low fuel consumption with pollution control canopy)		-do-

Quality Control Equipment

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Quality testing	PH Meter	0.10-0.75	To maintain the quality.
2	-do-	Wash fastness tester		-do-
3	-do-	Perspiration fastness tester		-do-
4	-do-	Rubbing fastness tester		-do-
5	-do-	Grey scales		-do-
6	-do-	Electronic balance		-do-

Textile Processing.

S. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Textile Processing	Bio-mass Gasifier based water boiler.	1 machine	Operated by natural fuel, advantageous in comparison to the diesel fired boiler. Environment friendly and easy to operate. Small investment and economic.

xxxv). Wooden furniture

xxxvi). Mineral Water Bottle

xxxvii) Paints, Varnishes, Alkyds and Alkyd products

a) Paints

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Manufacturing	Basket Mill	1.50	Faster production; Fast shades changeover; Less energy consumption;
		Twin Shaft Disperser	5	Lower maintenance cost;
		Tinter Dispencing System	7.50	Faster production; Less energy consumption;
		Electronic balances	0.75	Quick response to orders; Consistent quality;
		Automatic/Semi-Automatic Filling machines	2.25	Better shade reproducibility;
			0.75	Accurate weighment, consistent quality improved yield.

		D.M. Water Plant Transfer Pumps	1.65	Accurate weighment, faster production. improved yield. Improved quality; Reproducible Quality; Better shelf-life; Reduce wastages; Reduce cost; Faster production;
2	Technology	Powder Coatings Electrode position	25.00 15.00	Eco-friendly product; Better corrosion resistance; No fire/health hazards; Eco-friendly product; Better corrosion resistance; No fire/health hazards;
3	Quality control	Computerised Colour matching system Electronic balances Replacement by more accurate instruments	6.50 0.75 2.50	Consistent quality; Faster production; Optimum pigments usage; Cost reduction; Faster shade development; Better customer service; Accurate and quicker weighment. Overall improved quality Overall improved quality

b). Varnishes, Alkyds and Alkyd products

Sl. No.	Activity	Technology	Cost (Rs. in lakh)	Advantages
1	Manufacturing &	Reaction kettle	2.40	a) Lower Process

2.	Process Settling of un reacted particles	(closed) with temperature controller, pressure controller & agitator Settling Tank	0.60	Losses. b) Lower Energy consumption. c) Better quality while low heating avoids decomposition of material. d) Economics will be better & viability increases. e) Un-reacted material settles down & separated from bottom, quality will be better finally. f) Product is comparable with international standards i.e. low cost of production & Better quality of product.

xxxviii). Agricultural Implements and Post Harvest Equipment.

Cross-referencing of technology for this sub-sector may be taken from General Engineering Works at Sl. No. XXVI, Forging and Hand Tools at Sl. no. XXIV, Foundry at Sl. no. XXV and Auto parts and components at Sl. no. XXI.

xxxix). Beneficiation of Graphite and Phosphate.

xxxx). Khadi & Village Industries.

a) Palm based Industry.

Sl. No.	**Activity**	**Technology Need**	**Cost (Rs. in lakh)**	**Advantages**
1	Neera Processing	Poly-packing and quality control machines.	14.50	Increase of self-life of Neera and

				hygienic packaging. To avoid spoilage of Neera. To increase the sales Ready to serve natural nutritional product of palm to customers. To continue the sale of Neera during off-season also.
2	Palm sugar	Stainless steel crystallisers	3.50	Increase of productivity and quality/purity of sugar.
3	Palm confectionery	Cutting Dies/auto wrapping machine with design intervention (cylinder mould)	4.50	Quality improvement, product diversification, consumer attraction.

b) Khandsari Industry

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Jaggery making	Boilers/power operated crushers, temperature sensing Equipment incorporating thermocouple, reader and buzzer.	1.50	Uniform boiling of juice, time saving, avoid wastage, and quality end product. To know the exact striking temperature of the end product and to avoid spoilage of quality of product.
2	Cane sugar	Boilers (diesel fired),	6	Uniform boiling of

		purification plant, packing machinery		juice, time saving, avoid wastage and quality end product .

c) Village Oil Industry

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Edible oil extraction and oil cake manufacturing	(Improved 10 bolt expeller, 20 plates filtration machine, poly pack machine with quality control Laboratory)	10	To increase the oil extraction production. To increase shelf life of oil and sanitary production, moisture and fat protection, re-seal feature and ease of disposal.

d) Fruit & Vegetable Processing/Milk Based Products Industry

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Processing of fruits and Vegetables, canning, juice processing Jam, jelly, tomato products and dehydration.	Juice pasturizers and deaerators/ evaporation and Aroma recovery units/exhausting and retorting equipments/aseptic processing and filling units /cabinet or continuous band driers.	18	To improve the productivity and quality to compete in the market.
2	Beverages/preserves	Automatic can closing machines, hydraulic press, reforming unit, volumetric filter and food beverages Machineries and colloid mill and fully automatic packing and sealing (Pouch/tetra pack) machines, etc.	24	To improve the productivity and quality as well as value addition of the product. The packing technique will satisfy the customer needs and increase the self-life of the product.

3.	Milk Based products	Oil fired boilers, centrifuges (power operated), auto packing equipment, pasteurizing unit with cooling cabinet and quality control lab	18	To maintain the quality and purity of the end products as well as increase the productivity and compete the market with updated packing technology.

e) Pulses & Cereals Processing Industry.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Papad, Masala making, dal processing, spices and flour mill, etc.	Drier (sun or electrical), Peeling machine, screen machine and balancing machine with ab equipment/pulverisers and packing unit.	10	To serve the product with 100% purity as per consumer need and satisfaction.

f) Consumer and Chemical based Industry.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Toilet soap machinery	Duplex Plodder (125 kg Per hr.-two Worms in senes)	1.45	Better phase conversion of soap with improved finish-air trapping in soap is minimized.

g) Mineral- based Industry.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Mineral based industry Brick manufacturing Units Pottery/Ceramic	1. Mechanized Brick, making machine 2. Roller, Execution cutter etc. 3. Deairing Pug Mill 4. Ball Mill 5. Filter Press	12	Increased the production, quality strength, durability Socio-economic improvement

		6. Grinder 7. Blunger 8. Jigger Jolly 9. Kiln, Heavy duty 10. Hand Opened wheel 11.Electric operated wheels 12. Glaze equipment 13. Air compressor 14. Spray-Gun, Both, Decoration plant machines 15. Gasfired/Oil fired & Electric Furnance Tunnel Kiln 16. Stone Crusher Machine 17. Glass cutter, Gas fired kiln etc. 18. Cement Block making machine 19. Brick/Tiles Press Machine	 25-30 25 10 15 15	 -do- -do- -do-

h) Forest-based Industry.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Beekeeping	Bee hive ISI 'A' type standardized	0.01	For maintaining Apis cerana bee colonies in south India.
2	Beekeeping	Bee hive ISI 'B' type standardized	0.012	For maintaining Apis cerana bee colonies in north India.
3	Beekeeping	Bee hive ISI 'C' type standardized	0.18	For maintaining Apis mellifera bee colonies.
4	Honey extraction	Honey extractor Tangential type	0.08	To extract honey from Apis cerana bee colonies in south India.
5	Honey extraction	Honey extractor Radial type	0.01	To extract honey from Apis cerana bee colonies in north India.
6	Honey extraction	Honey extractor Tangential type	0.02	To extract honey from Apis mellifera bee colonies.
7	Beekeeping	Hive stands folding type	0.0015	To keep the Hive

				stands.
8	Honey Processing	Modern Honey Processing plant 300 kg per 8 hr shift	1	To process honey scientifically for marketing under Agmark.
9	Honey Processing	Honey Processing plant	5	To process honey scientifically For marketing under Agmark.
10	Royal jelly collection	Freez drier	2	To dry the Royal jelly collected from bee colonies.
11	Royal jelly collection	Royal jelly collecting equipments, frame, cups, spoon, etc.	0.50	To collect Royal jelly from the bee colonies.
12	Powder/Churna	Supper Mill (size reduction mill) Multiple application: dry milling, controlled grinding, dry mixing dispension, wet material Deduction, raw material milling, wet granulation sizing, dry granulation sizing tablet and capsules reclaim.	2	Operator safely feature; Easy clean design; Sturdy construction for long life; Low heat; Low dust-Low Noise; Uniform particular size; Production capacity: 200 to 2000 Kg per hour Power: 5 HP Weight: 160 kg
13	Tablet (pills)	Mini Tablet Press Output: 40 Tablets per minutes Motor: ¼ HP 3 phase Weight: 100 kg. approx	1.70	Operator safely feature; Precise product output; Automatic pressure release; Fine adjustment of pressure And Tablet weight. Easy changeable and

				maintenance;
14	Paste/Ointment	Single Head Rotary Tube (Paste filling and closing (crimping) machine	2.25	25 to 30 tubes per minutes with one operator; No tube-No fill device; Clean elegant sturdy compact design for all standard tube size for different volumes; No dropping; Automatic Injection of filled and sealed tube; Attachment for cleaning of tube by vacuum systems for specific requirement; All operations fully automatic;

i) Rural Engineering and Bio-technology.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Wooden product	Lacquer Polishing equipment	2	1.Better finishing. 2.Quality improvement. 3.Labour Intensive. 4.Time saving in mfg.
2.	Wooden furrniture designing	C.A.D. equipments	0.50	-do-

j) Black Smith.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	General fabrication	Powder coating	5	Better finishing, quality improvement,

				labour intensive, time saving in manufacturing.
2	Agriculture	Forging machine	2	-do-

k) Copper & Bell Metal.

Sl.No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Ethnic products	Polishing arrangement machine	1	Improved get up.

- **Aluminum**

1	Utensil and utilities	Anodizing machine	5	Improved get up.

m) Electronics

1	Crout designing for home accouliance items	Designing software along with accessories	1	1. Better finishing. 2.Quality improvement. 3. Labour intensive. 4. Time saving.

n) Paper & Fibre Industry

1.	Introduction of effluent treatment plant at the existing handmade paper unit	Individual effluent treatment plant (as per the design suggested by NEERI,Nagpur) details of the machinery and equipments required for a 3 Cu. Mt./Day	10.75 Cost estimates given by NEERI	The pollution supposed to be generated by a handmade paper unit is treated.
2	Usage of Agro residues including the natural fibres in Handmade Paper Industry	1. Boiler 2. Digeser	3	1. New raw materials such as jute, banana fibre, grasses, sun hemp are used in handmade paper

			2	industry 2. The new types of papers can be produced which have national and international demand 3. Water utilization (Banana fibre extracted from waste banana trunks) and making the eco-friendly products 4. Productivity is increased usage of agro wastes likely to bring the cost down.
		3. Poucher Washer 4. Hydrapulper	1.50 1.50	
3.	Hot drying process	A small drying equipment to dry the Paper with the help of electricity/small boiler	8	1. The present major problem of drying the paper sheets during winter and rainy seasons will be solved. 2. The quality (smoothness and stiffness) of the paper will be maintained. 3. The productivity will be increased. The paper is dried and calendared simultaneously so that the cost of the drying and

				calendaring will come down .
4.	Solar drying	A solar drier	5	1. The present major problem of drying the paper sheet during winter and rainy season will be solved. 2. Effective utilization of freely available solar energy. 3. The quality (Smoothness and stiffness) of the paper will be maintained. 4. The productivity will increase. The paper is dried and calendared simultaneously so that the cost of the drying and calendaring will come down.
5.	Fibre extraction	Fibre extraction machine(can be used for speedy work and in remote areas also due to which productivity could be increased @ Rs.25000/- per machine).	0.50	1. Presently fibre is extracted by hand methods due to which it is probably limited. The machine will increase the production and increase the earnings of the artisans engaged in the fibre extraction. 2. For quantity production

				newly developed fibre extraction machine will increase the productivity.
6	Conversion of Paper products	Due to in- house conversion facility for handmade paper products units could convert the handmade paper in value added products	2.40	1. Presently handmade paper units has to get the work done from outside resources for value added products like photo frame, Dairies, etc. 2. Due to in house as per conversion facilities it would be easy for the units to make value added items as per requirements of customers.

o **) Khadi Industries-Handloom**

1.	Replacement of NMCs	8 spindle charkha	1.25 (1 unit of 25 NMC's)	Increased productivity, Better quality of yarn, Increased earnings.
2.	Jacquard looms	Loom with the Jacquard devices	3 (1 unit of 10 looms)	Better design , Extensibility, Higher productivity, Reduced workmanship

				Operational ease.
3.	Cotton processing Dyeing	Semi automatic Jigger machines	2	Higher productivity, Assured quality, Reduces drudgery, Low production cost.
4.	Cotton processing Printing	Screen developing devices	2.50	Inclusion of new design range, enhances acceptance.
5.	Pre-spinning Equipments (Replacement of carding machine)	Improved LMW type mini carding	15	Improved quality of raw material. Reduces cost of raw material. Less overheads
6	Quality Control Equipments	Quality testing Equipments for -Fibre testing for maturity, staple length etc. -Yarn testing for strength, twist, count,hairiness etc -Cloth testing for threads per inch, strength, fastness etc.	3	Quality assurance at production level, low product rejection.

xxxxi. Coir Board

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Semi automatic Loom	• Semi automatic Loom fitted with a motor • Bobbin winding machine	1.5 for one meter, 5 for four meter wide loom, 1	Higher production of improved quality with least drudgery.

		• cops winding machine	0.35	
2	Anugraha Loom	Improved mild steel handloom	0.20 for one meter wide loom	Women can operate with least effort.
3	Quality of the raw material	PH meter, analytical balance, moisture balance, conditioning chamber, UTM and glass wares	33.5	To ensure products with improved and uniform quality.
4	Motorized Traditional Ratts (MTR)	Traditional Ratts fitted with 0.25 HP motor	0.35 each	Uniform twist with reduction in drudgery, enhanced daily income.
5	Manufacture of softened coir products	Mixing units, compressor, moulds, stitching equipment	6.5	Diversified uses like cushioned seats for school children and other new applications.
6	Garden articles from coir & natural rubber	Sheeting machine, compressor, hydraulic press, moulds, mixing units for latex and chemicals with ball mill, drier	22.50	Environment friendly plant growing media.
7	Coir pith products	Coir pith processing machine	4	Large accumulation of coir pith gets value addition.
8	Coir yarn spun on automatic spinning machine	Slivering machine, spinning machine	10	Modernisation of the spinning sector.
9	Rubberized Coir Manufacturing	Rubberized Coir Manufacturing Machine	100	Value addition in Rubberized Coir sector.
10	Curled Coir	Hackling machine, curling machine	15	Value addition at raw material stage.

xxxxii . Steel Re rolling and/or Pencil Ingot making Industries.

Sl. No.	Activity	Technology Need	Cost (Rs. in	Advantages

			lakh)	
1.	Reheating	Improved design of oil fired pusher hearth re-heating furnace (RHF)with high efficiency recuperator using latest CFD (Computational Fluid Dynamics) based software.	50-125 (Depending on level of revamping)	Saving in fuel for reheating, electrical energy in rolling, reduced burning loss, and better quality of rolled product.
2 (a)	Reheating	Pulverized Coal fired Reheating furnace using recuperator for pre-heating combustion air with improved burner design and coal handling facility.	25-35	Reduction in specific coal consumption, reduced dust/SPM generation and better operating environment.
2(b)	Reheating with the facility for producing 'producer gas'	Producer gas fired reheating furnace with high efficiency recuperator. Gas Producers can be set up at unit level without removal of tar.	50-75	Clean coal combustion will improve environment. Enhanced efficiency of gas combustion in comparison to lump coal combustion on grate.
3	Material handling	Hot charging of Ingot/Billet in RHF for rolling having facility such as • Transfer tables/transfer trolley • Overhead crane	150-160 (total)	More than 50% saving in thermal energy for reheating of steel for rolling.
4	Melting	New design of Induction furnace having two coils with independent control panel, heat exchanger equipment with provision for additional burners and application of harmonic filters.	80-100	Saving in cycle time and power consumption due to preheating of charge, facility to produce clean steels equivalent in

				quality to electric arc and ladle furnace combination, improved p ower factor up to 1.0 (unity) with saving in specific energy consumption for melting.

xxxxiii. Zinc Sulphate

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
01.	Zinc Sulphate Mono hydrate	Spray Dryer	50	Energy Saving, Quality improvement & environment friendly
02.	Zinc Sulphate Hepta hydrate	Flash Dryer (With or Without agitator)	30	Energy efficient reduces processing losses, Quality improvement & environment friendly

xxxxiv. Welding Electrodes

S.No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1	Manufacturing of Welding Electrodes	Complete copper coating line with annealing spooling & drawing capable to produce continuous welding wires	25	Waste minimization, Energy saving, Quality improvement and environment friendly. There is a global trend to shift to continuous welding wires to reduce wastage (unused end pieces in the case of welding electrodes). Wires also save 'changing time of electrodes.

xxxxv. Sewing Machine Industry.

Sl. No.	Activity	Technology Need	Cost (Rs. in lakh)	Advantages
1.	Melting Section	Divided blast copula with pollution control devices and electrical.	Up to 50	15% coke saving, better melt quality, higher tapping temperature, lower emissions, reduced air pollution.
		Induction furnace with cooling tower and water treatment plant with or without computerised control panel	Up to 25	Flexibility to produce ferrous castings of all grades, flexibility for charge mix selection, best melt quality, eco- friendly.
		Induction ladle refining furnace	Up to 40	Value added casting, eco-friendly.
		Skip charger for copula	Up to 1.50	Ease of charging, reduced labour cost, better control.
		Pouring / treatment ladles as per IS: 4475, 4476	Up to 1	Quality assurance, increased safety for workmen.
		Carbon Manganese, Silicon Apparatus for testing on shop floor	Up to 5	Quality assurance, control on elements.
		Continuous casting conveyor system	Up to 10	Improved productivity, better quality castings.
		Gas fired pit furnace	Up to 1.50	Eco- friendly, higher tapping temperature, better melt quality.
		Hydraulic- Pneumatic devices for knocking out cores.	Up to 5	Quick knocking of cores, cleaning and smoothening of surface.
		Overhead Crane	Up to 10	Quick and safe material handling.
		Aluminum Pressure Die casting machine along with tooling.	Up to 30	High production, improved quality, low machining cost.
		Investment Casting Plant	Up to 60	High Production, improved quality, low machining cost and higher productivity.
2.	Utility Section	Gas based generating set	Up to 30	Reduced air pollution, energy saving.
3.	Quality Control Lab, i..e. Metallurgic-al testing / lab testing /	Metallurgical testing: Metallurgical Microscope with image analyzer, photographic attachment sample	1.50 – 10	Quality Assurance, Defect analysis, diversification e.g. SG Iron production equipment essential to meet process control requirements.

	quality control equipment.	preparation machine		
		Stroholien apparatus, Muffle furnace, Hot plate, glass ware etc.	Up to 1	
		UTS	Up to 3	
		Spectrometer /mass spectrometer	Up to 25	
		Profile projector	Up to 20	
		Hardness Tester	Up to 1	
		Izod & charpy Impact testing machine	Up to 0.75	
		Ultrasonic testing machine	Up to 3	
		Magnaflux testing machine	Up to 1.50	
		Sand testing equipment Universal Sand Strength testing machine, sieve shaking device, compatibility scale, rapid moisture teller, permeability meter, mold / core hardness tester, muffle furnace, wash bottles, Stirrer / shaker, hotplate, vortex shaker, centrifuge etc. shatter index machine high tensile peel back, scratch hardness tester, stick point .	2- 8	Reduced defective casting, consistency in quality- reduction in additives cost, better cast surface finish.
		Metal Graphic Laboratory	Up to 10	
		Dimensional inspection instruments, surface Plate for making height gauge, Micrometer, Vernier, Profile projector with Digital reading system, Dial & Telescopic Gauges, Floating care age dia measuring machine, 3	Up to 50	Quality assurance, Defect analysis

		co-ordinate measuring machine		
		Gauges and testing equipments i.e. Snap, Plug, Ring, Thread plug gauges, Test Rigs and receiver gauges as per BIS standards	Up to 25	Quality assurance, defect analysis.
		Process control equipment' Carbon equivalent meter B) Pyrometer (Optical)	Up to 2 Up to 0.20	Consistency in quality, reduced defective casting, cost saving.
4.	Design & development Section	Computers and CAD Software, simulation software with printers / plotters / pro-engineering / Catia.	Up to 25	Computerisation of design and development to gain efficient and fast working.
5.	Moulding / Core section	Intensive mixers.	Up to 5	Reduced defective casting, better cast surface finish, reduction in additive cost, reduced air pollution.
		Wax Injection Machines	Up to 10	Requirement for modern investment casting process.
		De-waxing oven	Up to 2	Requirement for modern investment casting process.
		Moulding boxes as per Indian Standard 1280 & 10518.	Up to 3	Better dimensional accuracy, higher productivity.
6. `	Heat treatment Section	High Frequency Induction Hardening Machine / Equipment	Up to 10	Higher productivity, consistency in quality, eco- friendly.
		Case Carburising unit	Up to 5	Enhancement in life of parts, upgradation of quality.
		Rotary retort muffle furnace.	Up to 5	Enhancement in life of parts, upgradation of quality.
		Handling equipment overhead crane	1.30-3	Reduced labour cost, higher productivity, consistency in quality.
	6.1 Quenching.	i) Water quenching tank-with Heat exchanger unit	Up to 0.75	Process requirement to achieve quality.
		ii) Oil quenching tank-fitted with oil heating and heat exchanger to	Up to 1.50	Process requirement to achieve quality.

		obtain desired cooling rates for hardening.		
		iii) Air quenching fans.	Up to 0.30	Process requirement to achieve quality.
7.	Machine Shop / Production shop / Tool Room	CNC Milling machine	Up to 30	Higher productivity, dimensional accuracy, less skill requirement, consistency in quality.
		CNC Lathe Machine	Up to 15	
		Capstan lathe / Turret lathe	Up to 3	
		Radial Drill	Up to 5	
		Planner	Up to 3	
		Shaper	Up to 3	
		Jig Boring machine.	Up to 60	
		Hydraulically Honing machine.	Up to 20	
		Hydraulic/Pneumatic feed CNC Cylindrical/grinder machine.	Up to 25	Higher productivity, dimensional accuracy, less skill requirement, consistency in quality.
		Hydraulic or pneumatic feed Center less grinding machine.	Up to 30	Higher productivity, dimension accuracy, less skill requirement, consistency in quality.
		Hydraulic or pneumatic feed internal bore grinding machine.	Up to 30	
		Automatic Special purpose machine (SPM) for turning, boring, grinding, multi hole drilling, tapping, thread rolling machine, milling and double stroke heading machine	Up to 20	Higher productivity, dimension accuracy, less skill requirement, consistency in quality.
		CNC machining Centre	Up to 60	
		VMC & HMC Machining Centre	Up to 60	
		Numerical Control Welding machine	Up to 20	
		SPM Impression rolling machine (for decorative purposes)	Up to 15	

		Power press with automatic feeding arrangement	Up to 20	
		Knuckle Joint Press	Up to 25	
		Toggle joint press	Up to 40	
		Hydraulic press	Up to 50	
		CNC wire Cut machine	Up to 50	
		EDM machine	Up to 50	
		Deep hole drilling machine	Up to 40	
		Optical Profile grinder	Up to 30	
		Plastic injection Moulding machine	Up to 25	
		Automatic Mixture machine	Up to 12	
		Universal wood working machine	Up to 0.50	Higher productivity, improved quality
		Chain Mortisers	Up to 2	Higher productivity, improved quality.
		Surface Polishers electrically operated.	Up to 1	Higher productivity, improved quality
		Belt Sander machines.	Up to 5	Better surface finish, high productivity.
8.	Pattern shop	Drilling machine	Up to 1	Higher productivity, consistency in quality, narrower casting dimension, excellent finish, better productivity.
		Pantograph	Up to 2	
		Disc and Bobino Sand Grinder	Up to 3	
9.	Fettling Section	Shot, blasting machine.	Up to 5	Better surface finish and quality improvement Requirement to achieve quality.
		Pedestal grinder.	Up to 0.50	
		Swing frame grinder.	Up to 0.25	
		Painting booth.	Up to	

			0.50	
10.	Electroplating / painting.	Rotomatic Electroplating Plant.	Up to 25	Higher productivity, better quality.
		Computerised Electroplating plant.	Up to 70	Higher productivity, better quality.
		Centrifugal finishing machine.	Up to 20	Higher productivity, better quality.
		Vibrator finishing machine.	Up to 5	Higher productivity, better quality.
		SPM surface finishing machine.	Up to 5	Higher productivity, better quality.
		SPM Surface lapping machine.	Up to 5	Higher productivity, better quality.
		Electro polishing machine.	Up to 10	Higher productivity, better quality.
		Electrostatic powder coating plant with conveyors.	Up to 50	Higher productivity, better quality, and eco-friendly.

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