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Pramod RAWAL

INDIAN TECHNOLOGIES
IN THE SMALL SCALE SECTOR
COMMECIALLY AVAILABLE
FOR EXPORT
TO
DEVELOPING COUNTRIES

+?+

1986

LIST OF TECHNOLOGIES

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I. **Technology for manufacture of AGRICULTURAL IMPLEMENTS.**

II. The final product manufactured will be various types of agricultural implements like Disc Harrows/Ploughs/Cultivators etc.

The operations to manufacture agricultural implements involved are, cutting of sheets, bending, heating, forming to shape, hardering/tempering welding & assembling.

III. **Production capacity** : 48,000 pieces of Disc harrowes, 600 pieces of ploughs/cultivators per annum.

Machinery and equipment : Heavy duty Lathe, Screw Cutting Lathe, mechanical Presses, Drilling M/c. pedastal grinder, cut way grinder, power hacksaw, horizontal surface grinder, heating and tempering furnaces, Blacksmith's hearth, gas cutting equipment, shot blasting equipment, Air compressor, Testing equipment are the main machinery required.

Raw materials : Alloy Steel Sheets, Steel sections, welding electrodes.

Manpower : 50 persons.

Energy consumption : 270 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.4,300,000/- (Rupees Four Million Three Hundred Thousand only).

V. & VI National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of unit on Turnkey basis.

I. **Technology for manufacturing WATER STORAGE TANKS OF MILD STEEL/GALVANISED IRON.**

II. The final product is Water Storage tank of Square or rectangle shape. The manufcturing Process involves the operations like Sheet Cutting, Bending, Welding & Painting.

III.

PRODUCTION CAPACITY	:	200 to 500 Tanks per month.
REQUIRED EQUIPMENT	:	Shearing machines, Spot welding equipment, Arc Welding set, Painting equipment, Hand operated presses, set of working tools & fixtures.
RAW MATERIALS REQUIRED	:	M.S. or G.I. Sheets welding electrode, Paint (Black or Enamel).
PLANT SITE AREA:	:	300 Sq. m. is envisaged.
REQUIRED MAN POWER	:	8 persons.
ENERGY CONSUMPTION	:	20 KW.

IV. The total cost towards machinery & equipment is estimated at Rs.2,50,000/- (Rupees Two Hundred Fifty Thousand only)

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of unit on Turnkey basis.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of CONCRETE MIXER.**

II. Concrete mixers are used for preparing the mortar for building construction. Different types of Concrete mixers are in use i.e. Tilting type, Non Tilting type, rotter pan type. These are powered by Diesel engine or electric motor. The manufacturing process consists of steel fabrication involving chipping, grinding, welding, dressing of welded joints, drilling etc., and finishing of cast iron castings. Castings are to be procured from casting unit as per the design. Finally the unit is assembled and tested.

III. **Production capacity** : 120 Nos. of different type of concrete mixers.

Required equipment : The major machinery and equipment are Gas Cutting, Profile Cutting, Gas Welding, Arc Welding, Portable grinder, Power Hacksaw, Lathe, Shaping, Gear hobbing, Shearing machine, sheet Binding machine, spray painting etc.

Raw materials required : Mild steel, Angles, Channels, Squares rounds, Plates, Flats, Sheet, cast iron castlng and parts like, Bearing, brobe lining, link chain, wire rope, Nuts and Bolts etc. Diesel Engine/Electric Motors.

Plant site area : A total land area of 2,500 Sq.mt. is envisaged.

Required manpower Sixteen persons will be needed.

Energy Consumption : **110 KW.**

IV. The total investment required in Plant and Machinery only is estimated at Rs.9,00,000/- (Nine hundred thousand Indian Rupees).

However the cost of production depends on the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

I. ***Technology for the manufacture of <u>Steel Furniture.</u>***

II. *Steel furniture is used in homes, office, factories, etc. Steel furniture is prepared now-a-days because of its durability, strength. The manufacturing process includes, shearing, Bending, Drilling, Seaming, Welding Painting etc.*

III. ***Production capacity*** : *20 pcs. per day.*

Required equipment : *The major equipment are Steel shearing machine, Steel Bending machine, Gas Welding unit, Fly Press, Drilling machine, Spray Painting with compressor.*

Raw materials required : *Mild steel sheet, pipe, Angle iron, rivets, wood screw, paint etc. are the main raw materials required.*

Plant site area : *Land area of 300 Sq.mt. is envisaged.*

Required manpower : *10 persons will be needed.*

Energy consumption : *10 KW.*

IV. *The total cost towards machinery and equipment is estimated at Rs.100,000/- (One hundred thousand Indian Rupees only). However production cost depends upon local facilities.*

V & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.*

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of GALAVANISED IRON (G.I.)**

II. Bucket is an article of daily use found in every house-hold, office, Industrial Establishment to store, carry or draw water and other materials. Bucket body is made up of two halves seamed together. The two body blanks are cut to exact shape. The covered portion is cut by hand shear whereas straight edges are cut on a treadle operated gullitone. The body of bucket is sent for flanging out the top and bottom edges. Bottoms are cut on a circle cutting machine. The bottom is seamed with the body and handles are fixed.

III.

Production capacity	:	100 buckets/day.
Required equipment	:	The major machinery and equipment are Hand Shearing machine, Treadle Shearing, Bucket body bending machine, Circle cutting machine, Bar cutting and bending.
Raw material required	:	The main raw materials are Galvanised Iron Sheet, rod, rivets etc.
Plant site area	:	Land Area of 200 sq.mt. is envisaged.
Required manpower	:	6 persons will be needed.
Energy consumption	:	3 K.W.

IV. The total cost towards machinery and equipment is estimated at Rs.50,000/- (Fifty thousand Indian Rupees only). However the production cost depends upon local facilities.

V. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of CENTRIFUGAL PUMPS.**

II. These pumps are extensively used in agriculture and industry. In agriculture it is used for irrigation purposes, coupled with diesel engine or electric motors. Castings, flanges and impellers are casted in the foundry as per the design. The castings are machined, turned drilled. Impellers are step turned, faced drilled and threaded. Suction and delivery flanges are turned, bored, drilled and threaded. The shaft is turned, step turned and threaded. Glands are then assembled with nuts & bolts and welding wherever required.The pump is tested & spray painted.

III.

Production capacity	:	2 tons per day (assorted)
Required equipment	:	The major machinery and equipment are Cupola Furnance,Sand muller, Laddles, Moulding Boxes, Lathe, Shaping machine, Milling machine, Bench Grinder, Power hacksaw, Gas welding, Arc Welding.
Raw materials required	:	Pig Iron, Molases, lime, Silica sand, Hard coke, paints, nuts & bolts etc.
Plant site area	:	Land area of 600 sq.mt. is envisaged.
Required manpower	:	20 persons are needed.
Energy consumption	:	50 K.W.

IV. The total cost towards machinery and equipment is estimated at Rs.12,00,000/- (Twelve hundred thousand Indian Rupees).

However production cost depends upon the local facilities.

V.&VI **National Small Industries Corporation,Okhla,New Delhi,India can undertake setting up of the unit on Turnkey basis or provide know-how and prepare detailed project report.**

13 Indian Rupees = 1 U.S. $

I. ***Technology for the manufacture of Weighing Machine.***

II. *Weighing machines or weigh bridges are used to weigh heavy items e.g. luggage, machine parts, bulk material etc. Dials may be provided to give quick and clear indication of weight, beak scale type machines are most popular.*

The operations involved are cutting, shapping drilling, grinding, turning, milling, welding, filling and painting etc. It is envisaged to manufacture weighing machine with capacities up to one tonne only.

III. ***Production capacity*** : *300 machine/annum.*

Required equipment : *The main equipment are Oxyacety - line cutting equipment, welding equipment, Planning machine, Shapping machine, Hearth Drilling machine, Grinder, Lathe, Rod bending machine.*

Raw materials required : *The main raw materials are Iron castings, Mild steel plates, Beams, Allow steel, Bearings, Brass rods, Mild Steel sheets etc.*

Plant site area : *Land area of 500 Sq.mt. is envisaged.*

Required manpower : *10 persons will be needed.*

Energy consumption : *30 KW.*

IV. *The total cost towards machinery and equipment is estimated at Rs. 8,00,000/- (Eight hundred thousand Indian Rupees only).*
However the production cost depends the local facilities.

V & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.*

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of Water Meter.**

II. Water meter is an important instrument used for measuring flow of water. These are specified in a range of five sizes such as 15 mm, 20 mm, 40 mm, 50 mm. The manufacture of water meter involves the sub-assemblies like, Fitting of outerbody and cover, Fitting of rotary block or counter mechanism, Manufacture of the impeller, Assembly of end connections and Fittings, Manufacture of dial. The process involved to complete the above sub-assemblies are casting, Turning, Drilling, Tapping, Threading, Punching, Moulding, Injection moulding etc.

III. **Production capacity** : 9000 Nos. per year.

Required equipment : Equipment required are, Oil fired furnance, Grinder, Lathe, Drilling Double ended Grinder, Dial printing m/c. Hand operated injection moulded machine, Testing equipments etc.

Raw materials required : Brass, Plastic granules, Acrylic Sheet, Stainless steel rods, O.rings, Rubber washer etc.

Plant site area : Land area of 250 Sq.mt. is envisaged.

Required manpower : 12 persons will be needed.

Energy consumption : 40 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.600,000/- (Six hundred thousand Indian Rupees only). However the production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of HAND TOOLS.**

II. Spanners double ended, screw driver, Hacksaw Frame etc. are the hond tools which are must for a industrial unit, Automobile repair shop etc. As a matter of fact its utility lies in every field.

The process of manufacture consists of operations like cutting, Hot Forging, Trimming, Broceching, Rough Grinding, Heat treatment, Barrelling, Shot Blasing, Electroplating, Testing etc. Depending upon the hand tool manufactured the operations are selected.

III. **Production capacity** : 1000 Nos. per day. (Based on spanners from 6 mm to 24 mm).

Required equipment : The main equipment required are Power Hacksaw, Furnance, Friction Forging Press, Power Hammer, Tempering furnance, shot blasting, Electroplating Unit, Buffing machines, Quality Control Equipment, Testing Equipments etc.

Raw materials required : The main raw materials are Low Carbon Steel (Alloy) Square or Flat Section, Furnance oil, Heat treatment salts, Electroplating salts etc.

Plant site area : Total land area of 2500 sq.mt. is envisaged.

Required manpower : 15 persons will be needed for the job.

Energy consumption : 50 KW.

IV. The total cost towards machinery and equipment is estimated at Rs. 100,000/- (One hundred thousand Indian Rupees only). However, production cost depends upon the local facilities.

V & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.*

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of Brake linings for Automotive vehicles.**

II. Brake lining is required to create friction between the wheel drum and lining. The linings are desired to create sufficient friction on the one hand and minimum wear and tear of the wheel drum brake lining on the other hand. The design of the brake lining varies is as per the type of the vehicle.

The prepared ingredient consisting of Asbestos, fibre, synthetic resin etc. are taken and then pressed into required mould. After moulding, rough grinding, drying, drilling, and final grinding is done. It is tested and packed.

III. **Production capacity** : 300 sets per day.

Required equipment : Hydraulic press, grinding machine, Electric oven, Cutting and feeding machine, double ended grinder, drilling machine dust extraction unit are the major machines required.

Raw materials required : Asbestos fibre, resin, are the main raw material required.

Plant site area : A land area of 600 Sq.mt. will be needed.

Required manpower : 28 persons will be needed.

Energy consumption : 60 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.10,00,000/- (Ten hundred thousand Indian Rupees).

However production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi. India can undertake the setting up of the unit on Turnkey basis .

13 Indian Rupees = 1 US $

I. **Technology for manufacturing DOMESTIC PRESSURE COOKER**

II. It is a closed cooking vessel for use with external heat source capable of maintaining working steam pressure of 1.0 kg./cm^2 (gauge). The pressure cooker have preference over the conventional cooking utensils due to advantage of retaining the nutritive value and flavour of the cooked food and less time required for cooking and thus effecting considerable saving on fuel. The average size of the cooker generally required is from 3 lt. capacity to 5 lt. capacity.

Production process: The main operations involved in the production of Pressure Cooker are Circle cutting, deep draw of body, Drawing of lid, Trimming, Notching, Drilling, Assembly, Testing and finally finishing.

III. **Production capacity** : 18000 Nos. per annum.

Required equipment : The machines required are shearing, circle cutting, Deep Draw press, Hydraulic and Power Press, Drilling, Buffing and Polishing Machine, Testing equipments.

Raw materials required : Aluminium alloy sheet, Bought out items e.g. Pressure Regulating device, Bakellite handles, Synthetic rubber Gasket, Bolts and rivets etc.

Plant site area : The total covered land of 300 sq. mtrs. is needed.

Required manpower : About 15 persons.

Energy consumption : 30 K.W.

IV. Total cost including listing equipments is estimated to be Rs.7,00,000/-.

V. & VI The National Small Industries Corporation,Okhla,New Delhi, India can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees = 1 U.S. $

I. Technology for the manufacture of **Stoves (Wick-Type).**

II. The final products are wick-type stoves which use kerosene as fuel. These are quite fuel-efficient, light-weight and durable and popular for small families.

PRODUCTION PROCESS: The different sub-assemblies such as stand assembly, oil containing assembly, lever assembly, wick holding block assembly, heat conserving ring, top plate assembly, inner threaded sleave, outer perforated sleave etc. are assembled after the parts of each sub-assembly have been fabricated by basic mechanical processes such as circle-cutting, blanking, drawing, drilling, bending, perforating etc. Then the sub-assemblies are further assembled together in order to produce the complete stove.

III. **Production capacity** : 36,000 stoves per year.

Required equipment : The main machinery required for this unit are power presses, hand press, spot welding machine, seaming machine Treadle operated shearing machine, drilling and threading machine, circle-cutting machine, strip-cutting machine etc.

Raw materials required : CRCA sheet of deep drawing quality, mild steel wire, screws, nuts, cotton wicks, fly nuts, Asbestos sheet, welding materials etc.

Plant site area : 600 Sq.meters.

Required manpower : Direct labour of about sixteen persons is required for the unit.

Energy consumption : 80 KW.

IV. The total investment on plant and machinery alone is approximately Rs. 1,600,000/- (Indian Rupees one million six hundred thousand only).

However, the production cost will depend upon availability of local resources and facilities.

V. & VI. *The National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on Turnkey basis.*

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **BUILDERS' HARDWARE.**

II. The final products are Builders' Hardware made out of aluminium extruded bars, sections, strips etc. such as Tower bolts, door handles, window handles etc. The production process consists of fabrication of the items on basic machines, such as power hacksaw power presses, shapers, lathes, milling machines. After fabrication the pieces are buffed and/or anodised.

III. **Production Capacity** : 1.5 million assorted pieces per annum.

Required equipment : The main machinery required include power presses, shapers, lathes, milling machines, surface grinder, drilling machines, power hacksaw, welding equipment, hand presses, anodising plant etc.

Raw materials required : Aluminium extruded bars, sections, strips, anodising chemicals etc.

Plant site area : Covered area of about 300 sq. metres is required.

Required manpower : Direct labour of about 35 persons required.

Energy consumption : 100 K.W.

contd.2/-

IV. The total investment in machinery & equipment alone is approximately Rs.3,500,000/- (Indian Rupees Three million five hundred thousand only). The production cost, however, will depend upon availability of local resources and facilities.

V. The National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on turnkey basis.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **ALUMINIUM UTENSILS.**

II. The final products are aluminium utensils which are very popular in households, particularly for use in the kitchens. The production process consists of the cutting of aluminium sheets of the proper gauge into circles. These are then spun into the required shape on the spinning lathe in the case of sheets of thinner gauge. They are next finished by buffing or by anodising. The shapes of utensils from sheets of thicker gauge are formed on presses. These are also either finished by buffing alone or anodised. Handles etc. are fashioned out of rods and fixed on to the utensils.

III. **Production capacity** : Approximately 250,000 (assorted) pieces per annum.

Required equipment : The main machinery required for this unit consists of the circle cutting machine, spinning lathe, drilling machine, presses, buffing machine, anodising plant etc.

Raw materials required : Aluminium sheets, aluminium rods, aluminium rivets etc.

Plant site area 150 Sq. metres.

Required manpower : Direct labour required for the unit is about seven persons.

Energy consumption : 20 KW.

IV. The investment in machinery and equipment alone for this unit is approximately Rs.400,000/- (Indian Rupees four hundred thousand only).

However, production costs will depend upon availability of local resources and facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis or provide know-how.

I. **Technology for the manufacture of <u>BARBED WIRE.</u>**

II. The final product is barbed wire which is used for fencing purposes which are used to keep away cattle from area of cultivation etc. The production process is based on the use of a single automatic machine into which four different wire lengths are simultaneously fed. The stranding of the wires is followed by the formation of barbs.

III. **Prouction capacity** : 300 tons per annum.

Required equipment : Automatic special purpose machine for the manufacture of barbed wire, set of working tools etc.

Raw materials required : Galvanised wire of different sizes.

Plant site area : Covered area of 100 Sq.mt. is needed.

Required manpower : The total direct labour required for the unit is three persons.

Energy consumption : 12 KW.

IV. The total investment required on machinery and equipment only is approximately Rs. 80,000/- (Indian Rupees Eighty thousand only). However, the production cost, depends upon the availability of local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Paper Pins** used for pinning the paper sheets.

II. **Production Process:** Hard drawn bright wire of suitable gauge is fed into the automatic paper pin manufacturing machine, where the paper pins are formed. These paper pins are pickled and cleaned then they are electroplated in the plating barrel.

III. **Production capacity** : 12 M.Tons./Nos. per annum (assorted paper pins)

Required equipment ; Automatic paper pin making machine, plating barrel with accessories, drier drum, double end grinder etc.

Raw materials required : H.B. wire 20 to 22 SWG and electroplating chemicals.

Plant site area : 100 Sq.mt.

Required manpower : 6 Nos.

Energy consumption : 10 HP.

IV. **Investment costs** : Rs.5,00,000/-.

Production costs : Rs. 5,00,000/-.

V. **Know-how.**

VI. **Contact Addresses**

1. Development Commissioner,
   (Small Scale Industries),
   Nirman Bhavan, New Delhi-110 011.
2. National Small Industries Corporation,
   Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for **Bicycle Carrier** (for carrying load on the rear part of the cycle).

II. **Production Process:** Steel sections are taken and cut to length and they are bent to shape by means of fixtures. They are further assembled with springs and painted, and baked in a baking chamber.

III. **Production capacity** : 1500 dozens of cycle carriers per annum.

Required equipment : Universal hand shearing machine, fly press, bench grinder, baking oven, bending fixtures etc.

Raw materials required : Mild steel channel, bolts, nuts, springs and paints etc.

Plant site area : Covered area of 100 Sq.mt.

Required manpower : 7 persons.

Power required ; 5 H.P.

IV. **Capital investment** : Rs.3,50,000/-.

Cost of production Rs.5,00,000/-.

V. Know-how.

VI. **Contact Addresses**

1. Development Commissioner,
   (Small Scale Industries),
   Nirman Bhavan, New Delhi-110 011.
2. National Small Industries Corporation,
   Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for **Galvanised Pipes** used for general water pipelines and household purposes.

II. **Production Process:** Sheets are first bent on the drawing bench and then rolled on rolling mill. They are gas welded pickled and cleaned then galvanised. These galvanised pipes are then sent for threading.

III. **Production capacity** : 10,32,000 running feet of galvanised pipes.

Required equipment : Draw bench 30' with accessories, rolling mill with motor, oxy-acetylene gas welding set, pipe setting lathe, galvanised bath, acid pickling and washing tanks, rotary shearing machine, pipes strainghtening machine, arc welding set, pipe cutter, pedestal grinder, hydraulic testing equipment.

Raw materials required : Skelp and zinc.

Plant site area : 500 Sq.mt.

Required manpower : 30

Power required : 100 HP.

IV. **Capital investment** : Rs.22,00,000/-.

Cost of production : Rs.90,00,000/-.

V. Know-how.

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the setting up of **General Purpose Jobbing Machine Shop.**

II. **Production Process:** Jobbing workship consists of certain general basic machinery required for carrying out the day-to-day jobs like maintenance and repairs, etc. requiring machining, drilling, welding, grinding etc.

III. **Production capacity** : As per jobbing requirements.

Required equipment : Production Lathe machine, shapping machine, bench drilling machine, grinder, milling machine, welding set etc.

Raw materials required : Steel rods, sheets etc.

Plant site area : 150 Sq.meters.

Required manpower : 10 Nos.

Energy consumption : 25 H.P.

IV. **Investment costs** : Rs.10,00,000 (Rupees One million)

Production costs : Rs.8,00,000 (Rupees 0.8 million).

V. **Know-how proposed**

VI. **Contact Addresses** :

1. Development Commissioner,
   (Small Scale Industries),
   Nirman Bhavan, New Delhi-110 011.
2. National Small Industries Corporation,
   Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **AUTO LEAF SPRINGS** required for Automobile vehicles.

II. **Production Process:** Flats/alloy steels, are cut and sheared to sizes and heated for eye-forming. They are then drilled and punched by means of power press. Hardening is done after cambering process. Assembly of leaves spring is done after fitting of reamed bushes on the main spring. Tested for load.

III. **Production capacity** ; 6000 Nos. per annum.

Required equipment : **Production:** Hacksaw machines, lathes, power press, grinders, hearth furnace, oil fired furnace, cambering machine, compressor etc.

Testing: Hardness testing machine, spring load testing machine, etc.

Raw materials required: Spring steel strips, boards, U-clamps, quenching oil, paints, furnace oil, hard coke, etc.

Plant site area : 300 Sq.mt.

Land : 100 sq.mt. (open)

Covered space : 200 Sq.mt.

Required manpower : 30 Nos.

Power required : 35 HP.

IV. **Capital investment** : Rs.28,00,000/-.

Cost of production : Rs.80,00,000/-.

V. **Know-how.**

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **ALUMINIUM FURNITURE**

II. **Production Process:** Aluminium furniture is manufactured by cutting folding and bending of tubes, sheets, flats, angles, etc. to be desired specifications and designs and milling, drilling and counter-sinking the holes, anodising and finally assembling.

III. **Production capacity** : Assorted chairs: 1250 Nos.
Stools : 300
Baby trolleys: 300 Nos. per annum.

Required equipment : Benging machines, milling machines, drilling machines, hand-press, rivetting and buffing machines, bench grinder, anodising plant, stitching machines.

Raw materials required: Aluminium pipes and other sections, nylon straps, clothes, U-form and cushions, decolam, veneered particle boards, seasoned wood, hardware fittings and chemicals and polishing materials, etc.

Plant site area : 200 Sq.mt. covered area

Required manpower : 14 Nos.

Power required : 20 HP.

IV. **Capital investment** : Rs.8,00,000/-.

Cost of production : Rs.15,00,000/-

V. **Know-how.**

VI. **Contact Addresses** 1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **BOLTS, SCREWS & NUTS.**

II. **Production Process:** Steel rods are cleaned, cold-headed, trimmed and shaped. They are fed to the thread holding machine and later electroplated (where necessary).

III. **Production capacity** : 50 Tonnes M.Tons/per annum (assorted sizes)

Required equipment : **Production:** Cold-heading machines, bolt head trimming machines, thread rolling machines, screw head slotting machine, electroplating plant, lathe, shaper, drilling machine and hacksaw machine, grinder.

Testing: Hardness testing machine.

Raw materials required : Steel rods and coils, chemicals.

Plant site area : 150 Sq.mt. covered space.

Required manpower : 16 Nos.

Power required : 100 HP.

IV. **Capital investment** : Rs.20,00,000/-.

Cost of production : Rs.15,00,000/-.

V. **Know-how.**

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Chaff Cutter** for cutting fodder into small pieces.

II. **Production Process:** Chaff cutters are made of cast iron and steel parts. Cast iron parts are manufactured by melting pig iron in a cupola and cast to the required shapes and assembled with the machined steel parts.

III. **Production capacity** : 9600 Nos. per annum.

Required equipment : **Production:** Cupola with blower and motor, sand muller and moulding boxes, core oven, lathes, drilling machines, grinding machines, power press, arc welding set, shaping machine and shearing machine etc.

Testing: Sand testing equipment, inspection gauges, hardness testing equipment, etc.

Raw materials required: Pig iron, mould steel rods, lime-stone, coke, sand, mould chemicals, fire bricks, etc.

Plant site area : **Land** : 500 sq.mt.

Covered space : 150 Sq.mt.

Required manpower : 30 Nos.

Power required : 75.HP.

IV. **Capital investment** : Rs.20,00,000/-.

Cost of production : Rs.50,00,000/-.

V. **Know-how.**

VI. **Contact Addresses** 1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of TIN CONTAINERS**

II. **Production process:** Tin sheets are cut to various sizes to form top, bottom and side bodies of the container. They are then notched, trimmed and embosed. Bending, side locking, etc. are done by means of heavy duty flypress. Filler hole punching with embosing is done on the top lid with suitable embossing dye. The top and bottom square cans are closed by means of seaming machine and lead soldering is done on the joints. Completed containers are tested for leakages if any.

III.	**Production capacity**	:	4,50,000 Nos. per annum.
	Required equipment	:	Gullotine Shearing machine, body punching machine, Power Presses, heavy duty Piller type flypress, filler hole punch and embossing machine, seaming machine, etc. & Air-Compressor for leak testing of the container.
	Raw materials required	:	Tin sheets, soldering lead, GI wire, etc.
	Plant site area	:	250 sq. mt.
	Required manpower	:	25 Nos.
	Energy consumption	:	30 HP
IV.	**Investment costs**	:	Rs.30,00,000/-
	Production costs	:	Rs.1,20,00,000/-
V.			Know-how
VI.	**Contact addresses**	:	1.Development Commissioner,Small Scale Industries,Nirman Bhavan,New Delhi-110011 2.National Small Industries Corporation,Okhla, New Delhi-110020 India.

13 Indian Rupees = 1 U.S. $

I. Technology for the manufacture of **Metallic conduit pipes** for use in electrical wiring, steel furniture and building construction etc.

II. **Production Process:** Steel strips are formed to shape by drawing in draw bench, gas welded, re-drawn and straightened. They are cut to sizes, threaded, pickled, painted and dried in the baking oven.

III. **Production capacity** : 3,50,000 meters of conduit pipes per annum.

Required equipment : Draw bench, power press, pipe cutting machine, pipe straightening fixture, strip cutting machine, gas welding equipment, pipe threading machine, grinder and bench drill, enamelling plant and baking oven.

Raw materials required : Steel strips, stove, enamelling paint, oxygen and acetelene gas.

Plant site area : 200 Sq.mt.

Required manpower : 20 Nos.

Energy consumption : 20 HP.

IV. **Investment costs** : Rs.14,00,000/-.

Production costs : Rs.50,00,000/- per annum.

V. **Know-how.**

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Wire Gauges & Metal Wire Netting (Thicker than 100 Mesh size for** use in Industrial & Building Construction Work).

II. **Production Process:** There are mainly two types of wire nettings, viz. honey comb-wire netting and woven wire netting. Wires of required gauge is twisted together with another wire of same gauge from a spiral coil rod. The wires fed from number of bobbins and from the corresponding number of special rods travel through the holes provided in the semi-circular pinion gear and en-twined with one another, to get hexagonal design. Woven wire netting is produced on the universal wire weaving loom and small square designs of required sizes are got in the process.

III. **Production capacity** ; Hexagonal wire net Sq.wire nettings of assorted mesh - 50 rolls of $3' \times 100'$

Required equipment : Hexagonal wire netting machine, universal wire netting machine, bobbin stand, etc.

Raw materials required; G.I. wire 20 to 40 SWG.

Plant site area ; 250 Sq.mt. covered space.

Required manpower : 14 Nos.

Power required : 6 HP.

IV. **Capital investment** ; Rs.20,00,000/-.

Cost of production : Rs.65,00,000/-.

V. **Know-how.**

VI. **Contact Addresses**

1. Development Commissioner,
   (Small Scale Industries),
   Nirman Bhavan, New Delhi-110 011.
2. National Small Industries Corporation,
   Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **LEAD PENCILS.**

II. **Production Process:** The lead pencil consists of lead core and wooden sheathing, high grade graphite powder is mixed with ball clay in suitable proportion and ground into ball mill and the mixture is fed into the filter press and dried and kneaded. The required size of lead is then extruded in the ext:usion machine. Heated in the refractory furnace. Wooden sheathing is provided from machined, shaped and grooved slats. Two slats with lead slips secured in the grooves are put under pressure and allowed to set. They are then machined to size, painted and printed.

III. **Production capacity** : 37,500 gross pencils per annum.

Required equipment : Ball mill, filter press, kneading machine, press machine, baking oven, automatic shaping and grooving machine with motor, gluing machine, pressing, polishing and end cutting machine, painting machine and embossing machine, furnace, etc.

Raw materials required : Wood slats, graphite, ball clay, glue, paint and varnishes, etc.

Plant site area : 300 Sq.mt. covered area

Required manpower : 35 Nos.

Power required : 25 HP.

IV. **Capital investment** : Rs.12,00,000/-.

Cost of production : Rs.26,00,000/-.

V. Know-how.

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Wood Screws** used in wood furniture electrical fittings, railway carriages, building construction etc.

II. **Production Process:** The wire is fed into the automatic heading machine for forming the head and cut to the required length, slotting and threading is done by means of slotting machine and thread cutting machine. The screws are then degreased pickled and polished.

III. **Production capacity** : 75,000 gross per annum.

Required equipment : Heading machines of different capacities slotting machine, both light duty and heavy duty, threading machines and polishing drums, pickling and cleaning vats.

Raw materials required : M.S. Bright wire rod and polishing material.

Plant site area : Covered space : 200 Sq.mt.

Required manpower : 15 Nos.

Power required : 15 HP.

IV. **Capital investment** : Rs.12,00,000/-.

Cost of production : Rs.18,00,000/-.

V. Know-how.

VI. **Contact Addresses**

1. Development Commissioner,
   (Small Scale Industries),
   Nirman Bhavan, New Delhi-110 011.
2. National Small Industries Corporation,
   Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Wire nails** for using industrial as well as domestic purposes.

II. **Production Process:** Hard drawn bright wire is fed to the nail making machine, where the wire is first straightened, cold headed and cut to the predetermined length, the cut end is sharpened. The nails coming out of the machine are deburred in the tumbling barrel.

III. **Production capacity** : 180 M.Tons./Nos. per annum.

Required equipment : Wire nail making machine suitable for range of wires 20SWG to 14SWG X $\frac{1}{2}$" to 2" length and 14SWG to 9SWG. X 1"X3" length. Tumbling barrel, bench grinder and die sets.

Raw materials required : Bright mild steel wire.

Plant site area : Covered space : 150 Sq.mt.

Required manpower : 8 Nos.

Power required : 10 HP.

IV. Capital investment : Rs.6,00,000/-.

Cost of production : Rs.25,00,000/-.

V. **Know-how.**

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of Crown Corks used for closure of aerated water bottles, soft-beverage bottles, fruit-juice bottles, beer and other alcoholic drinks bottles.

II. Production Process: Tin plates (normally 31 SWG) are cut into strips of required width, laquered and dried. Where necessary metal printing is done on the strip. Then they are punched out on special purpose crown cork punching machines. Cork discs or foam plastic discs are pasted manually to the crown cork.

III. **Production capacity** : 180,000 Nos. per annum of printed and plain crown corks.

Required equipment : Crown cork punching machine with automatic strip and feeding attachment, shearing machines (treadle operated), flat bed offset/ printing machine, varnishing/tin quoting machinery, stoving facility for printed/ varnished sheets, set of press tools.

Raw materials required: Tin plates, cork discs, chemicals, varnish and printing ink.

Plant site area : 200 Sq.mt.

Required manpower : 12 Nos.

Power required : 15 HP.

IV. **Capital investment** : Rs.6,00,000/-

Cost of production : Rs.15,00,000/-.

V. **Know-how.**

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

3. M/s. Manekdal & Sons,
Narayana Dhuru St.
Mandvi, Sarabai Mohalla,
Bombay-3. INDIA.

4. M/s. J.N. Jethwa Container Machinery,
Jethwa Industry House,
1, Favourite Industrial Estate,
Masarani Lane, Halay Bridge,
Kurla West, Bombay-10. INDIA.

13 Indian Rupees = 1 US $

I. Technology for manufacturing **PRESSURE DIE-CASTING COMPONENTS.**

II. Aluminium and its alloys finds the wide application in Die-casting components. Aluminium alloys stand up well to impact load. This is the reason that this alloy has found a universal acceptance in automobile industries. Die casting technique is one of the fast methods of metal shaping, with close tolerance. It takes only the construction of new Die to make a new product.

Production process: A aluminium alloy metal ingots and scrcps are melted and dies are mounted on the machine. The hot molten metal is forced by high pressure into these dies of the machine. The castings are taken out and the flashes are removed.

III. **Production capacity** : About 4-6 tons of various die casted parts per annum.

Required equipment : The main machines are pressure Die-casting, cold chamber, Air compressor, Furnance etc.

Raw materials required : The main raw material is aluminium alle

Plant site are a : Total covered area required is 200 Sq.mt.

Required manpower : A total number of five persons are required for running the unit.

Energy consumption : 30 KW.

IV. The cost towards machinery and equipment is estimated to be Rs.8,40,000/-.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis.

13 Indian Rupees = 1 US $

I. Technology for **Mild steel welding electrodes** used in general fabrication work by arc welding process.

II. **Production Process:** Electrode quality steel rods are drawn to required sizes and straightened on straightening machines. They are cut to size and later coated with flux in a flux-quoting extrusion press. The flux coated rods are then dried in drying ovens before they are packed.

III. **Production capacity** : 200 MTs per annum.

Required equipment : **Production:** Wet mixer, automatic slug press; dry blender, sieving machine, weighing machines, extrusion press with conveyor system; drying oven, wire straightening and cutting machine, arbour press, lathe machines and gas and arc welding equipments.

Testing: Universal testing machines, IZOD impact testing machine, rockwel hardnes tester, carbon sulphur apparatus, weighing balance, microscope, moisture determination equipment.

Raw materials required: Steel wire, flux compounding materials (Chemicals)

Plant site area : Covered area : 1000 Sq.mt.

Open area : 500 Sq.mt.

Required manpower : 40

Energy required : 50 HP.

IV. **Capital investment** : Rs.100,00,000/-

Cost of Production : Rs.200,00,000/-

V. **Know-how.**

VI. **Contact Addresses** 1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

.....2/

3. *M/s. Special Machines Pvt. Limited,*

Karnal, INDIA.

13 Indian Rupees = 1 US $

I. Technology for **Iron Foundry** (for producing grey iron castings used in cooking sanitation, drainage systems, building materials etc.).

II. **Production Process:** Pig iron and cast iron scrap are melted in a melting furnace in a coke fired cupola with the addition of lime stone. Molten metal thus produced is poured in a mould cavity with the help of laddle. Castings are knocked out when it is cooled and are later fettled.

Production capacity ; 600 MT of casting per annum.

Required equipment : **Production Equipment:** Cupola, moulding machine, sand muller, central lathe, drilling machine, air compressor, wood saw machine, weighing scale, mould and core drying oven, moulding boxes, flexible shaft Grinder etc.
Testing Equipment: Sand testing equipment, flexible shaft grinder, chemical analysis equipment, inspection equipment like hardness tester Pyrometers.

Raw materials required: Pig iron, cast iron scrap, coke, lime-stone, pattern making materials, fire clay, moulding sand, bentonite, ferro silicon etc.

Plant site area : Land : 1200 Sq.mt.
Covered area : 800 Sq.mt.

Required manpower ; 30

Energy required : 50 HP.

IV. **Capital investment** : Rs.18,00,000/-

Cost of production : Rs.45,00,000/-

V. **Know-how.**

VI. **Contact Addresses** 1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. **Technology for STEEL RE-ROLLING MILL for producing steel rods, Angles, Channels, Squares, Hexagon etc.**

II. **Production process:** Steel billets are heated in furnace at 1200 centigrade to 1250 centigrade and when it is white hot, the billets are put into the rolling mills for rolling to desired dimensions.

III. **Production capacity** : 2400 MT of rolled steel per annum

Required equipment : Re-rolling mill - 10" dia. roll to 10 stands, flywheel 10 tons, Gear boxes and gears with rolls & couplings, Bed plates and other accessories, Pre-heating oil fired furnace of 20 ton capacity with oil tank heating arrangement etc. with 500 KVA transformer and 300 HP motor and heavy duty and general purpose lathes. Billet shearing machine with motor, shaper, piller drilling machine, pedestal grinder, coil winding machine, weighing scale etc.

Raw materials required : Steel Billets & Rerollable scrap

Plant site area : 1000 sq. mts.

Required manpower : 40 Nos.

Energy consumption : 500 HP

IV. **Investment costs** : Rupees seven million

Production costs : Rupees twenty million

V. Know-how

VI. **Contact addresses** : 1.Development Commissioner, Small Scale Industries, Nirman Bhavan, New Delhi-110011
2.National Small Industries Corporation,Industrial Estate, Okhla,New Delhi-110020 India

13 Indian Rupees = 1 U.S. $

I. **Technology for manufacture of NON-FERROUS CASTINGS.**

II. **Production process:** The castings of metals and alloy metals/copper, zinc, tin, lead etc. fall under the group of non-ferrous castings. Some of the prominent alloy castings such as brass, bronze, aluminium, bronze, gun metal etc. (used for various purposes like bearings, bushes, automobile parts, corrosion resistent parts, marine parts etc.)

Main products manufactured are:-

1.Gun metal valves, 2.Gun metal bush, 3. Water meter body, 4. Aluminium clamps and connectors, 5. Impellers for Motors and Pumps, 6. Bell metal castings.

The process is based on sand casting process. Sand moulds are made either manually or by machine moulding. The metal as per the specified composition is melted using oil fired furnaces. Molten metal is poured in the moulds for getting castings. Then castings are removed from the moulds, cleaned and fettled.

III.	**Production capacity**	:	50 MTs of different types of non-ferrous castings.
	Required equipment	:	Oil furnace - 100 Kg. capacity, Mould machine, Double ended grinding machine, Lathe, Drilling machine etc.
	Raw materials required	:	Copper, Zinc, Tin, Aluminium, Furnace Oil, flux, sand binders, etc.
	Plant site area	:	300 Sq. meters.
	Required manpower	:	20 persons.
	Energy consumption	:	15 H.P.
IV.	**Investment costs.**	:	Rs.15,00,000 (Rs.1.5 million)
	Production costs	:	Rs.60,00,000 at 50% capacity (Rs.6 million)
V.	**Know-how proposed.**		

contd.2/-

VI. Contact addresses : 1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110011.
2. National Small Industries Corporation,
Okhla, New Delhi-110020, India

13 Indian Rupees = 1 U.S. $

I. **Technology for manufacture of AUTO BULBS.**

II. The final product will be various types of bulbs for auto mobile industry. The main operation involved are glass shell/tubes cutting, fixing of electrodes, filament, caps and final assembly and testing.

III. **Production capacity** : 3000 bulbs per day.

Required equipment : Glass tube cutter, Flaring machine, stem making machine, sealing in machine, spot welder, exhaust bench, capping machine, Argon gas purifying Tower, Testing equipment are the main machinery.

Raw materials required : Glass tube shells, electrodes, Filaments, Caps, Cement, & Chemicals are the raw material required.

Plant site area : 200 Sq.m. is envisaged.

Energy consumption : 25 KW.

Required manpower : 20 persons.

IV. The total cost towards machinery and equipment is estimated at Rs.650,000/- (Rupees six hundred fifty thousand only).

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis or provide know-how.

13 Indian Rupees = 1 US $

I. **Technology for manufacture <u>ELECTRIC MOTORS (UPTO 50 H.P.)</u>**

II. The final products are various types of electric motors of both Single Phase and Three Phases.

The operations involved in the manufacture of electric motors are machining of motor-body castings, motor rotor and Stator Winding, testing and assembly.

III. **Production capacity** : 350 motors per month both Single and Three phase with 2 to 8 poles.

Required equipment : Lathes, milling machines, power presses, boring machines, grinding machines, drilling machines, winding machines, painting equipment, working benches, assembly tools and jigs, testing equipment are the main production machinery needed.

Raw materials required : Castings, Copper wires, stampings material, insulating material, Paint etc. are the main raw materials.

Plant site area : 1,500 Sq.m. is envisaged.

Required manpower : 25 persons will be needed.

Energy consumption : 200 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.4,000,000/- (Rupees four million only).

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis or provide know-how.

13 Indian Rupees = 1 US $

I. **Technology for manufacturing ELECTRIC FANS.**

II. The final product is an electrically operated fans of both table and ceiling types.

The operations involved in the manufacturing of electric fans are machining of castings. Cutting of fan blades, winding of motors, Painting of all parts, sub assembly of fan blades, motor and final assembly of fans. The inspection will be carried at various stages to maintain the quality.

III. **Production capacity** : 2,500 Fans per month.

Required equipment : The major machinery and equipment are Lathes, Shaping machines, milling machines, bench grinders, Power presses, Winding machines, Painting equipment, baking oven, Drying oven, Inspection Equipment, Dies tools, Jigs & fixtures.

Raw materials required : Castings for fan body and motor. M.S. Sheets, Copper wire, Regulators, Switches, Electric cable, Paint are the main raw materials.

Plant site area : Land Area of 2,500 Sq.m. is envisaged.

Required manpower : 80 persons will be needed.

Energy consumption : 125 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.2,500,000/- (Rupees Two million Five Hundred Thousand only). However production cost depends on the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis or provide know-how.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Domestic Electrical Appliances (Storage Water Heater).**

II. Storage water heater are of double walled chamber with thermal insulation in between two walls. The heating will be performed by immiersion type tubler heating system.

The operations involved in the manufacturing of storage water heaters are cutting of sheets, rolling of inner and outer case, drilling, welding, fabrication of outer and inner cases including inlet and outlet entry, enamel painting and stoving assembling. Similarly manufacturing of heating rods have the operation like winding of wire and inserting in the tube, filling magnisium oxide in the tubes, swaging, annealing etc. Finally the assembly is tested. The selection of machinery is so done to cover the other electrical appliances like electric iron and toaster etc.

III. **Production capacity** : 6000 water heaters/annum.

Required equipment : The major machinery and equipment are power shearing machine, rolling machine, rib forming machine, spot welding, gas welding, phosphating tanks, hand drill hand presses, double action deep draw press, lathe, circle cutting, filling, M/c. swaging machine, anealing furnace, element winding machine, pipe bending.

Raw materials required : Mild steel sheet, copper sheet, brass sheet, Brass pipe, copper sheathed, glass wool, brass springs etc. are the main raw material needed.

Plant site area : Land area of 2000 Sq.mt. is envisaged.

Required manpower : 30 persons will be needed

Energy consumption : 100 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.30,00,000/-.

However production cost depends upon the local facilities.

V & VI. *National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis or provide know-how.*

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of VOLTAGE REGULATORS AND STABILIZERS**

II. Voltage stabilizers are devices to control and regulate the fluctuations in the supply of voltage within a desired range.

The core is wound with predetermined number of turns with the help of coil winding machine and stamping is fitted inside the coil. The whole thing is impregnated in varnish and dried. Finally all the components are assembled and fixed in a container, with indicator and connections are made. The unit is tested for ripple, stability, temperature co-efficient and transit recovery time.

III. **Production capacity** : 20 units per day.

Required equipment : The major machinery and equipment are Transformer, winding machine, variable transformer, baking oven, various testing instruments, etc.

Raw materials required : The main raw materials are Core, insulated copper wire, stampings, varnish, voltmeter, switches, metal container etc.

Plant site area : Land area of 100 sq. mt. will be sufficient

Required manpower : 4 persons will be needed.

Energy consumption : 5 K.W.

IV. Total cost required towards Machinery and equipment is estimated at Rs.80,000/- (Eighty thousand Indian Rupees).

However Production cost depends upon the local facilities.

V & VI National Small Industries Corporation,Okhla,New Delhi, India can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees = 1 U.S. $

I. **Technology for the manufacture of BAKELITE ELECTRICAL FITTINGS.**

II. The final products are electrical fittings like switches, plugs, points, pin holders and lamp holders. Phenol-formaldehyde thermosetting plastics are characterised by excellent resistance to heat & water and excellent insulating properties. To manufacture them, a mould with male and female parts is needed to be fitted in a manual press equipped with heating and cooling arrangements. Preformed pellets and powder or a combination of these is fed to the mould cavity in predetermined quantity. The metallic components are also kept in the requisite position. The mould is then closed by lowering the male part in the female part quickly and accurately. Heat and pressure is applied for some preset time. After opening the mould and cooling, the article is ejected and trimmed and polished.

III. **Production capacity** : Aproximately 30,000 dozen assorted items per year.

Required equipment : The main machinery required consists of compression moulding presses, ball presses, bench drilling machine, grinder, buffing machine etc.

Raw materials required : Phenol formaldehyde in the form of preform, pellets and/or powder, metal parts such as points, pins etc.

Plant site area : Covered area of 150 sq.mts.is required.

Required manpower : Direct labour requirement for the unit is about three persons.

Energy consumption : 20 K.W.

IV. The total investment on plant and machinery alone is approx.Rs.150,000/- (Indian Rupees One hundred and fifty thousand only). However, production costs will depend upon availability of local resources and facilities.

V.& VI. The National Small Industries Corporation, Okhla,New Delhi, India can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees = 1 U.S. $

I. **Technology for manufacturing PVC (Polyvinyl Chloride) Cables.**

II. The final product is PVC cable and wires.

PVC cables are suitable for use where the combination for ambient temperature and temperature due to a continuous load in the conductor does not exceed 70°C. PVC cables are of two grades (i) 250/440 volts grade cable. (ii) 650/1100 volts grade cable. the 250/440 volt grade cables are suitable for use on single phase or 3 phase system where voltage between each conductor and earth does not exceed 250 volts. The 650/1100 volts grade cables are suitable for use on medium voltage 3 phase system where voltage between the conductor and earth does not exceed 650 volts.

The process of manufacturing consists of wire straightening and coating of wires through PVC extruder and finally it is tested and printed.

III. **Production capacity** : 10000 coils per month of various sizes.

Required equipment ; The main machinery and equiapment required are wire straightening, measuring and cutting, PVC extruder and wire coating, testing equipments. etc.

Raw materials required : Raw materials, PVC Granules, Drawn copper/ aluminium conductors are the main raw material required.

Plant site area : Covered area of 500 Sq.mt. is needed.

Required manpower : The total direct labour required for the unit is eleven persons.

Energy consumption : 30 KW.

IV. The total investment required in machinery and equipment only is Rs.600,000/- (Rupees six hundred thousand Indian Rupees).

However the production cost depends upon local facilities.

V. & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on turnkey basis.*

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **General Light Service Lamps (GLS)** used for lighting in houses, offices and streets etc.

II. **Production Process:** Manufacturing process involves shell washing and drying, lead glass tube cutting and flaring, stem making, molybdenum pig tialing for supporting the filament, mounting the filament on electrodes (electrodes lead-in-wire), gettering, sealing, vaccuming the shell and ageing of filament and capping of the bulb.

III. **Production capacity** : 3,00,000 Nos. per annum (15 W - 100 watts).

Required equipment : Glass tube cutting machine, heat flairing machine, heat sealing machine, high vaccum pump, capping machine, ageing machine, filament mounting press, soldering equipment etc.

Plant site area : Area : 600 Sq.mt.
Covered space : 400 Sq.mt.

Raw materials required : Flaring tube, exhaust tube, glass shells, filaments, Lead-in-wire, aluminium caps, capping cement, argon gas, LPG Gas, Oxygen gas etc.

Required manpower : 30(Nos.

Power required : 20 HP.

IV. **Capital investment** : Rs. 1 million

Cost of production : Rs. 2 million

V. Know-how.

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.
2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.
3. M/s. Kalpana Industries,
A-41, Industrial Estate, Pologround,
Indore (Madhya Pradesh) INDIA.

13 Indian Rupees = 1 US $

I. **Technology for ALL ALUMINIUM CONDUCTOR/STEEL REINFORCED CONDUCTORS used in transmission of electricity from source of generation to distribution centres.**

II. Production process: Aluminium wires are drawn in wire drawing machines out of aluminium rods with purity 99.8% and more. These wires are made in continuous lengths upto 5 kms. by welding the ends of each wire and winding on suitable drums. The drawn wires are then stranded alongwith galvanised steel wire of the same size. In case of AAC conductor, stranding together is done without steel wire.

III. **Production capacity** : a) AAC Conductors: 1000 Kms.
b) ACSR Conductors: 2000 Kms.

Required equipment : Production: Wire drawing machine, Bobbin winding machine, Welding machine, High speed stranding machine, Pointing machine
Testing: Universal Testing Machine,Kelvin bridge with spot galvanometer, Torsion testing equipment, Wrapping testing equipment, Physical balance.

Raw materials required : Aluminium rods (electrolitic purity 99.5% to 99.8%), Galvanised steel wire.

Plant site area : Built up 500 sq. mts.
Open 200 sq. mts.

Required manpower : 30 Nos.

Energy consumption : 500 HP

IV. **Investment costs** : 5 million rupees.

Production costs : 10 million rupees.

V. Know-how

contd.2/-

VI. Contact addresses : 1.Development Commissioner(Small Scale Industries), Nirman Bhavan, New Delhi-110011
2.National Small Industries Corporation, Okhla, New Delhi-110020 India.

13 Indian Rupees = 1 U.S. $

I. **Technology for manufacture of D.C. MICRO MOTORS used in audio tape recorders and electrical/electronic toys.**

II. Production process: Armature is made up of punched laminations which are stacked together. This is wound with fine copper wire to serve as rotor. The wound armature is fitted on to the fine stainless steel shafts, which is further fitted with the commutator brush assembly. A permanent magnetic ring serves as the stator and the rotor is placed inside the stator and covered with the end plates through sintered and self lubricating bearings. The metal shield in the form of a strip is wound around the motor body.

III. **Production capacity** : 100,000 Nos. per annum.

Required equipment : Automatic armature coil winding machine, laminat-punching press, automats, epoxy dipping machine, solder bath, strobo scope, digital torque indicator and electronic testing instrument.

Raw materials required : High premibality lamination steel sheets, stainless steel shaft wire, commutator rings, silver brushes, ferrite magnet deep drawn metal cover and mu metal sheet, fine copper wire, etc.

Plant site area : 150 sq. mtrs.

Required manpower : 20 persons.

Energy consumption : 10 H.P.

IV. **Investment costs** : Rs.15,00,000

Production costs : Rs.15,00,000

V. **Know-how proposed.**

VI. **Contact addresses:** : 1.Development Commissioner(Small Scale Industries) Nirman Bhavan,New Delhi-110 India.

contd.2/-

2. National Small Industries Corporation,
Okhla, New Delhi-110020 India

13 Indian Rupees = 1 US $

I. **Technology for INVERTERS/EMERGENCY LIGHT**

Inverters/emergency lights are electronic gadgets that serve to operate conventional electrical appliances in situations which can not provide for operation through mains.

II. **Production process:** Depending upon the voltage/out-put required, suitable circuit is designed. The printed circuit board is made/bought out to the circuit design and active devices and passive components are mounted on to the printed circuit boards. The PCB assembly is then integrated with the transformer and connectors, which are then placed inside the metal box.

III. **Production capacity** : Inverters: 1,000 Nos. per annum
Emergency lights: 3000 nos. per annum

Required equipment : D.C. Regulated power supply, Coil winding machine, Jigs and fixtures for winding transformers, Electronic testing instruments, Digital multi meters, Transistors etc., Registors/capacitors etc.

Raw materials required : SCRs, Transistors, Diodes, printed circuit boards, teransformers (or components of transformers), wire, chassis connectors, metal box, etc.

Plant site area : covered area of 100 sq. mtrs.

Required manpower : 15 persons

Energy consumption : 10 H.P.

IV. **Investment costs** : Rs.8,00,000

Production costs : Rs.30,00,000

V. : Know-how

VI. **Contact addresses** : 1.Development Commissioner(Small Scale Industries) Nirman Bhavan,New Delhi-110011
2.National Small Industries Corporation,Okhla, New Delhi-110020 India

13 Indian Rupees = 1 U.S. $

I. Technology for the manufacture of T.V. Antenna used for receiving Signals for TV receivers.

II. Production Process: Anodized aluminium pipe are cut to size for reflector and director. For dipole, it is bent making a loop. Plastic terminal box is moulded in injection moulding machine. These components are clamped to a square bar at pre-determined distances. The whole structure is fixed on a pipe.

III. **Production capacity** : 6000 Nos. per annum.

Required equipment : Pipe bending machine, drilling machine, hand-shearing machine, hand press and injection moulding machine.

Raw materials required : Aluminium pipe ($\frac{1}{2}$" dia) , aluminium square, plastic powder, hardwares.

Plant site area : Covered space : 200 Sq.mt.

Required manpower : 10 Nos.

Power required : 5 HP.

IV. **Capital investment** : Rs.2,00,000/-.

Cost of production : Rs.6,00,000/-.

V. Know-how.

VI. **Contact Addresses**

1. Development Commissioner,
   (Small Scale Industries),
   Nirman Bhavan, New Delhi-110 011.
2. National Small Industries Corporation,
   Okhla, New Delhi-110 020 INDIA.
3. M/s. Batliboi & Company,
   G.B. Road, Delhi-110 006 INDIA.

13 Indian Rupees = 1 US $

I. **Technology for VIDEO CASETTES used for Recording films, Programmes, demonstrations etc.**

II. **Production process:** Plastic covers, and other parts are moulded and fitted with guide pins and sheet springs. Video magnetic tape is procured either as jumbo rolls or as pancake. The video tape of standard form is wound on the hub with the help of video loaders. The wound hub is encased on to the plastic covers and tested for performance.

III.	**Production capacity**	:	200,000 Nos. per annum
	Required equipment	:	Automatic video loader, Assembly tools, jigs and fixtures, Video camera/VCR/colour monitor, Pneumatic Screw drivers with splicer.
	Raw materials required	:	Plastic parts, pressed/mechanical parts, turned pins, rollers, video magnetic tapes in pancakes, sticker lables and covers.
	Plant site area	:	100 sq. mts. covered
	Required manpower	:	10 persons
	Energy consumption	:	3 H.P.
IV.	**Investment costs**	:	Rs.30,00,000
	Production costs	:	Rs.12 million
V.		:	Know-how
VI.	**Contact addresses**	:	1.Development Commissioner(Small Scale Industries) Nirman Bhavan,New Delhi-110011 2.National Small Industries Corporation, Okhla, New Delhi-110020 India

13 Indian Rupees = 1 U.S. $

I. Technology for **Carbon Track Potentiometers** used in T.V. receivers/ tape recorders, Transistors radios etc.

II. **Production Process:** Liquid carbon composition is sprayed on to the phenolic sub-strate. Coated substarates are punched and fitted with terminal contacts. Potentiometers are assembled either into a can-rotor assembly mechanism or merely fitted with a wiper mechanism depending upon the application.

III. **Production capacity** : 3 million pieces per annum.

Required equipment : Carbon solution mixing plant, sprayer unit, punching presses, assorted presses for wiper components, rivetting presses, spring coiling jigs, assembly jigs, testing and sorting unit.

Raw materials required: Graphite powder, resin, binding agent, silver paste, phenolic boards, copper/nickel rivets, berrylium copper strips, brass/steel rodes, nuts washers etc.

Plant site area : 200 Sq.mt.

Required manpower : 50 persons.

Energy requirement : 10 HP.

IV. **Investment costs** : Rs.10,00,000/-.

Production costs : Rs.30,00,000/-

V. **Know-how.**

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for manufacture of **Tape Deck Mechanisms** used for holding drive mechanism and Playhead in audio tape recorders/car casette players.

II. **Production Process:** Sheet metal is cut to Size and formed into a pressed shape of the chassis. On the chassis assembly of levers, springs, selector switches, micro motors and magnetic head is made.

III. **Production capacity** : 100,000 Nos. p.a.

Required equipment : Power press, sheet shearing machine, rivetting presses, toggle presses, drilling machine, maintenance tool room, vow and flutter meter, DC – power supply and a passivation booth.

Raw materials required : M.S. Sheets, DC micro motors, magnetic head, plastic moulded parts, rubber parts, switches with interlock mechanism, rivets,etc.

Plant site area : 200 Sq. meters.

Required manpower : 40 persons.

Energy consumption : 5 H.P.

IV. **Investment costs** : Rs.15,00,000/-

Production costs : Rs. 3 millions.

V. Know-how.

VI. **Contact Addresses** :1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-11.

2. National Small Industries Corporation,
Okhla, New Delhi-20 India.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of <u>Automobile OIL and AIR Filters.</u>**

II. An engine requires oil for running and lubrication purposes. For trouble free operation it should be free from any abrassive particles which can cause harmful wear and tear to the internal components. Similarly Air filter cleans the air with respect to the foreign particles before it is sent for combustion. The operations involved in the manufacturing of oil and Air filters are Shearing. blanking, forming, rolling, spot welding, etc. Pleating of uncured filter paper and assembly.

III. **Production capacity** : 10,000 Units per annum.

Machinery and equipments : The main machinery and equipment are Shearing machine, Circle shear, Power Press, Sheet rolling machine, Spot welding Centre Lathe, Pleating M/c., Clipping machine, Adhesive dispenser, Baking over etc.

Raw materials : The main Raw materials are Filter Paper, perforated tin coated metallic sheets, cold rolled, cold anealed steel, springs, rubber washer, gaskets, casting etc.

Plant site area : A land area of 400 Sq.mt. is envisaged.

Required Manpower : A total number of 20 persons will be needed.

Enegry : 22 KW.

IV. The total investment required towards machinery and equipment only is estimated at Rs.3,70,000/- (Three hundred Seventy thousand Indian Rupees).

However Production cost depends upon the local facilities.

V&VI National Small Industries Corporation India, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees = 1 US $

I. **Technology for the production of PAPER (Mini Paper Mill.**

II. The scheme envisages production of paper for exercise books, paper wrapers, kraft paper, cartridge paper, M.G. poster paper, File wrapper etc. The waste paper, cotton cuttings, jute waste are made into pulp. The pulp is mixed with chemicals and passed over cylinder mould where paper formation is done. The wet paper is passed over M.G. drier for drying.

III. **Production Capacity** : 2 Metric Tons per day on 3 shifts basis (from 55 gms to 150 gms.)

Required equipment : The major machinery and equipment are Rag chopper, Hydro Pulper, Thickener, Beater, Stock chest, Machine chest, Centricleaner, Cylinder-mould, M.G. Drum, Vaccum pump, slitting and rewinding, sheet cutting, pulp pump, Agitator and other pumps.

Raw materials required : Paper waste, cotton cloth cutting, Jute waste, Caustic Soda, Bleaching Powder, Dye stuffs, Titanium dioxide, Alum (Iron Free), optical bleach are the main raw materials required..

Plant site area : Land Area of 5000 sq. mt. is envisaged.

Required manpower : 50 persons.

contd.2/-

Energy consumption : 100 K.W.

IV. The total cost towards machinery and equipment is estimated at Rs.21,00,000/- (Twenty one hundred thousand).

However production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake setting up of the Unit on turnkey basis.

13 Indian Ruppes = 1 US $

I. Technology for the manufacturing **PAPER BAGS.**

II. Paper bags are common packaging material being used by bakers, and confectioners, grocers, textile industries and cloth merchants, dry cleaners etc. The whole process involved in the manufacturing of paper bags in automatic, starting with printing and ending up with stacking up of finished bags. The paper rolls may be initially cut into proper width and they are fed into the Printing unit first. After doing the printing work, the rolls go into the bag making section where it is folded pasted sheared and stacked.

III.

Production capacity	:	1,50,00,000 Nos. (Size 220x320 mm) per annum.
Required equipment	:	Automatic paper bag making and printing machine with accessories.
Raw materials required	:	The main raw materials are Kraft paper, Glue printing ink etc.
Plant site area	:	100 Sq. mt. of covered area will be needed.
Required manpower	:	3 persons will be required to run the unit.
Energy consumption	:	10 KW.

IV. The cost towards machinery and equipment only will be of Indian Rs.2,50,000/-.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **PAPER CUPS AND SAUCERS.**

II. Paper cups and saucers etc. are extensively used at present for serving eatables in parties, functions and social gatherings etc. Paper cups are also used as containers for ice-cream, curd cups or coffee cups.

Paper is first printed on printing press. The printed part is cut to size and given desired shape by die cutting. The bottom and upper part are then assembled. For wax coating operations, the assembled cups are put in a wax coating machine. For paper plates the paper is printed and cut to circles. The circles are pressed to form paper plates.

III. **Production capacity** : 36,00,000 Nos. per annum.

Required equipment : The machines required are Printing Press, Plates Power press, Paper cutting machine, screw press wax coating machine.

Raw materials required : Gray Board/Mill Board, kraft paper, paraffin wax, Printing Ink, gum etc.

Plant site area : Built up area of 50 Sq.mt. will be needed.

Required manpower : A total number of 8 persons will be needed to run the unit.

Energy consumption : 8*KW.

IV. The cost towards machinery and equipment is estimated to be Indian Rs.1,20,000/-.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **PAPER CONES.**

II. The final products are paper cones used by the Textile industries for winding of yarn. They are disposable items.

Production Process: Mill board of suitable GSM value is cut into patterns. the edges are ground to obtain smoothness on the edge grinding machine. Embossing is done on the surface of the patterns to obtain the knurling type of rough surface. After glueing, the cones are formed on the winding machine. The top is nosed and the base is suitably cut. The cones are then packed.

III. **Production capacity** : 5,00,000 Nos. per annum.

Required equipment : The main machinery required includes an accentric power press, edge grinding machine, embossing machine, glueing machine, cone winding machine, nosing and base cutting machine etc.

Raw materials required : Mill board sheets of different GSM, Kraft paper sheet, starch, dextrine casein etc.

Plant site area : 400 Sq.mt. of covered area is required.

Required manpower : Direct labour of about fifteen persons will be required.

Energy consumption : 30 KW.

IV. The total investment on machinery and equipment alone is approximately Rs. 500,000/- (Indian Rupees five hundred thousand only). However production cost will depend upon availability of local resources and facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis or provide know-how.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **PAPER TUBES.**

II. The final products are paper tubes of different diameters, which are used in the textile industry.

Production Process: Kraft paper of different GSM in the form of rolls forms the main raw material. The paper is slit into long strips. Then the tubes are wound and long lengths obtained. These are then cut into small tubes of required lengths. Trimming and parting is done to give the desired finish to the tubes. If the tubes are required for winding of rayon or texturised yearn, nosing and polishing of the tubes is done.

III.

Production capacity	:	1.4 million tubes per year.
Required equipment	:	The main machinery required include a high speed paper roll slitter - rewinder, spiral tube winding machine, cutting machine (automatic) semi-automatic tube trimming and parting machine, tube nosing and polishing machine etc.
Raw materials required	:	Kraft paper of different GSM, parchment paper, sodium silicate dextrine etc.
Plant site area	:	Covered are of 400 Sq. mt. is required.
Required manpower	:	Direct manpower of about fifteen persons
Energy consumption	:	30 KW.

IV. The total investment in machinery and equipment alone is approximately Rs.2,50,000/-. However, the production cost will depend upon availability of local resources and facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis or provide know-how.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of CARDBOARD BOXES.**

II. The final products are cardboard cartons or boxes of various sizes. These are used for the packaging of a large variety of goods.

Production process: Cardboard sheets are cut into the proper sizes. The scoring and creasing is done on the machine specially provided for the purpose. The corners are cut in the corner cutting machine. The sides are bent and the ends brought together and stitched or stapled. If required, printing is done on the top surface or labels are pasted.

III.

Production capacity	:	250,000 Nos. per annum.
Required equipment	:	The main machinery required includes sheet cutting machine, rotary scoring and creasing machine, bending machine, corner cutting machine, stitching machine, heavy duty stapling machine, simple printing machine etc.
Raw materials required	:	Cardboard sheets, stitching wire, staples, glue etc.
Plant site area	:	Covered area of 150 sq. metres is required.
Required manpower	:	Direct labour of about five to six persons is required.
Energy consumption	:	10 K.W.

IV. The total investment in machinery and equipment alone is approximately Rs.4,50,000/-(Indian Rupees Four hundred and fifty thousand only). The production cost, however, will depend upon availability of local resources and facilities.

V&VI The National Small Industries Corporation,Okhla,New Delhi, India can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees = 1 U.S. $

I. **Technology for the manufacture of PAPER CARTONS**

II. Paper cartons are large and small size boxes. These cartons are wide-spread use in packing of so many articles like medicines, bakery products, soap, shoes, automobile parts, electronic parts, rubber items etc. They are light in weight, easy to fabricate and store. Paper is first printed and then cut on by die punching, to required size. The creasing machine makes the line on which it is to be folded. They are then folded, glued or stitched with wire to get the final carton in which printed labels may be pasted if required.

III. **Production capacity** : 10,000/day.

Required equipment : Printing machine, paper cutting machine, cutting creasing, folding, gumming/ stitching machine.

Raw materials required : The main raw materials needed are Paper board, gum, wire, Printing ink, Varnish etc.

Plant site area : Land area of 400 Sq.mt. is envisaged.

Required manpower : 15 persons will be needed.

Energy consumption : 20 KW. ,

IV. The total cost towards machinery and equipment is estimated at Rs.3,00,000/- (Three hundred thousand Indian Rupees only).

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis .

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Corrugated Fibre Board Containers** used in packing of industrial as well as consumer goods.

II. **Production Process:** Two paper reels are run on a corrugating machine for corrugating one reel and pasting the other to the corrugated one. These are cut with board cutter and the corrugated side glued on pasting machines. The Board is kept under sheet pressing machines for setting of the wet glue sheets. Corrugated boards are slitted, longitudinally cut, creased slotted, co. cutting done and stitching made.

Production capacity : 3,00,000 Nos.

Required equipment : Rotary scoring, creasing and cutting machine, board cutter, binding machine, single slotting machine, corner cutting machine, stitching machine, etc.

Raw materials required : Corrugated fibre board of 3 ply sheets card board sheets.

Plant site area : 200 Sq.mt.

Required manpower : 14

Power required : 10 HP

IV. **Capital investment** : Rs.4,00,000/-.

Cost of production : Rs.12,00,000/-.

V. **Know-how.**

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Exercise books** and Registers used for educational and accounting purposes.

II. **Production Process:** On ruling machine paper is first ruled and cut to size of exercise books and registers Required number of pages are creased and perforated and stitched with cover page or gummed.

III. **Production capacity** : Exercise Books - 5,00,000
Registers 1,50,000 Nos. per annum.

Required equipment : Paper cutting machine, ruling machine, creasing, scoring and perforating machine, wire stitching machine, gumming machine and hand press.

Raw materials required : White paper, grey board, card board, stitching wire, inks, glue thread, cloth etc.

Plant site area : Covered area : 300 Sq.mt.

Required manpower : 12 Nos.

Power required : 6 HP.

IV. **Capital investment** ; Rs.4,00,000/-.

Cost of production : Rs.1,60,000.

V. Know-how.

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of HAND MADE PAPER

II. **Production Process:** The final product is paper of higher grammage or paper board (for file cover etc.) or Mill board (for shoe boxes etc. paper of different grammages can be used). The process is labour-intensive although the product is not, strictly speaking, hand made. This terminology is used to differentiate the process from that employed by large, automatic paper mills: Waste paper is mixed with small proportions of certain typesof agricultural waste, cotton tailor cutting and rags which have been cut to small pieces and cooked with caustic soda in the digestor.

Chemical and colour is mixed as required. The mixture, together with proper volumeof water is beaten into pulp in the Holland-er beater. This is then sent to the cylinder mould where the sheets of paper are formed. The sheets are pressed to remove excess water and then sun dried and then calendered to get a smooth finish. They are then cut to required size and packed.

III. **Production capacity** : 75 Tons/year of paper of highe r grammage

or

125 tons/year of paper board

or

225 tons/year of mill board.

Required machinery and equipment : The main machinery required for the unit are rag chopper, digestor, Hollander beater,cylinder mould and vat, Hydraulic press, calandaring machine etc.

Raw materials : waste paper, rag. tailor cuttings, hosiery cuttings, bagasse, certain types of grass, caustic soda, bleaching powder etc.

Plant site area : Covered area of about 1000 sq.metres is required.

	Manpower	:	Direct labour requirement is for forty five persons.
	Energy required	:	80 K.W.
IV.	**Investment cost**	:	The total investment in machinery and equipment alone is approximately Rs. 950,000/- (Indian Rupees Nine hundred and fifty thousand only.) The production cost will depend upon availability of local resources and facilities.
V & VI.	**Know-how proposed**	:	The National Small Industries Corporation, India can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees= 1US $

I. **Technology for manufacture of RUBBERISED COIR MATTRESSES.**

II. The final product. Rubberised Coir mattresses are made in three stages i.e. Production of fibre, making of curled Coir, finally rubberising the Coir and Sheet making. The main operations involved in manufacture of Rubberised Coir mattresses are processing of coconut husk to obtain fibres.

These fibres are curled and spooled. The curled fibre is treated with rubber solution and processed to form the Rubberised coir sheets. These sheets are cut to size after inspection.

III. **Production capacity** : 300 Ton per annum of Rulberised sheets.

Required equipment : Husk Crusher, Revolving Screener, Baling Press, Turbo cleaner, Hauckler Mixer, Re-spooling unit, Waste Beaker, Untwisting machine, Spraying Cabin, Hydraulic Mat press, Drying Stove & Vulcanisers circular cutter, Latex Agitator System, Colloid Mill, Bale Mill, Air-compressor, Steam Generator are the main M/c required.

Raw materials required : Coconut Husk, Natural Rubber, other chemicals.

Plant site area : 4,000 Sq.mt. is envisaged.

Required manpower : 100 persons are required.

Energy consumption : 350 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.15,500,000/- (Rupees Fifteen Million Five Hundred Thousand only).

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of <u>OIL SEALS.</u>**

II. Oil seals are used in machinery to keep oil or lubricant enclosed at a place even under pressure. Seals may be all rubber, fabric containing or metal containing as per the requirements. The last type of oil seal is generally used in machines, engines and automobile engines etc. For metal containing seals, sheets are cut and punched in power press and is bonded and cured with rubber. The rubberised rings are trimmed, springs inserted and in a close oil seal, inner ring is filled. The edges are sealed. The rubber seal is tested, cleaned oiled and packed.

III. **Production capacity** : 1000 Seals per day.

Required equipment : The major equipments are Rubber Mixing Mills, Hydraulic press, Hand operated steam heated press, Boilers, Guillotine shearing press, power press, Drilling machine, Grinder etc.

Raw materials required : Nitrile Rubber, SBP1502, FEF Black, Plasticiser, Zinc Oxide, Stearic acid, MBTS, TMT, Sulphur etc. are the main raw materials required.

Plant site area : Land Area of 600 Sq.mt. is envisaged.

Required manpower : 12 persons are needed.

Energy consumption : 40 KW.

IV. The total cost towards machinery and equipment only is estimated at Rs. 500,000/- (Five hundred thousand Indian Rupees).

However the cost of production depends upon local facilities.

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V & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.*

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of CYCLE TYRES AND TUBES.**

II. Bicycle continues to be the most popular conveyance of the masses. Cycle Tyres and Tubes are important items of Bicycle. While the Cycle Tyres take all the impact and roughness of the road, Cycle tube absorbs them. The quality of the items depends upon the extent to which they can resist/absorb the impacts and roughness of the road. The manufacture of Cycle tyres involves rubber compounding. Fixing of Tyre cord with rubber compound, Fixing of bead wires and then moulding. The manufacture of Cycle tubes involve rubber compounding moulding, fixing of value and finally joining by rubber solution and vulcanizing.

III. **Production capacity** : Tyres 2, 25,000 Nos. per annum.
Tubes 2,25,000 Nos. per annum.

Required equipment :: The major equipments are Mixing Mill, Cycle Tyre, Vulcanizing Press Rubber spreading machine, Tyre moulding machine, Valve nut Tightening machine, Valve nut punching machine, Air removing machine, Mandrel, Rubber extruder, Boiler and Testing equipments.

Raw materials required : The major raw materials required are Synthetic rubber, reclaimed rubber, Tyre cord and other rubber chemicals.

Plant site area : 1000 Sq.mt. of land area will be needed.

Required manpower : 30 persons will be required.

Energy consumption : 150 KW.

IV. The total investment required towards machinery and equipment only is estimated at Rs.25,00,000/- (Twenty five hundred thousand Indian Rupees).

However the production cost depends on the in

V & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.*

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of CANVAS HOSES.**

II. Canvas Hoses are used for transmission of water from one place to another. These are mostly used during fire fighting by Fire Brigade and can also be used for irrigation purposes.

Cotton yarn wounded on reels is formed into a warping beam and Tubuler type of cloth is woven on the circular looms. The hoses are then coiled/spooled on coiling machine.

III. **Production capacity** : 60,000 Kg. per annum.

Required equipment : The major Machinery and equipment required are Automatic circular weaving loom, winding machine, Pirn winding, Coiling machine etc.

Raw materials required : The raw materials required are Cotton Yarn, Wax etc.

Plant site area : 400 Sq.mt. will be needed.

Required manpower : Six persons will be required to handle the unit.

Energy consumption : 15 KW.

IV. The total investment required towards machinery and equipment is estimated Rs. 5,00,000/- (Rupees Five hundred thousand only).

However the production cost depends upon the local facilities available.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

13 Indian Rupees = 1 US $

I. **Technology for TYRE RETREADING**

II. Tyre Retreading is a process of replacing worn out treads of automobile tyres by fresh treads. By the process of retreading, the whole tyre becomes fit to be put to service again almost as a new tyre and these work quite satisfactorily for sufficient long period giving almost the same mileage of a new tyre.

The process of Tyre retreading involves three important steps. Firstly the used and waste tyre is cleaned and buffed and any visible holes are filled and vulcanised. Secondly vulcanizing solution is applied on the tyre surface in sufficient quantities to hold the tyre retreading rubber compound. Lastly the tyre is pressed in pressing machine and vulcanized at the required temperature and pressure.

III. **Production capacity** : Scooter/Motor-cycle Tyres - 24 Nos. per day.
Car Tyres - 5 Nos. per day.

Required equipment : The major machinery and equipment required are Tyre Retreading Machines, Boiler, Sprayer, Buffing etc.

Raw materials required : The main raw materials are Rubber retreading compound Rubber adhesive, solvent oil etc.

Plant site area : Covered area of 150 Sq.mt. will be needed.

Required manpower : A total number of 5 persons will be needed.

Energy consumption : 10 KW.

IV. The total investment required towards machinery and equipment only is estimated at Rs.3,00,000/- (Rupees Three hundred thousand only). However production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis or provide know-how.

I. Technlogy for the production of **Latex Foam Mattresses.**

II. **Production Process:** The Latex Foam Mattresses are used in Homes, Hospitals etc. These are light in weight and provide much needed cushioning effect.

Rubber latex is taken and its ammonia content is reduced by blowing air into it. Sulphur dispersion acceterator dispersion, stabilisers, antioxident etc. are incorporated and mixture is beaten to a foam. The mixture is then refined-poured into mould where it gets and vulcanised. It is cooled, washed, squeezed to remove the soluble salts. It is dried and cut as per requirements.

III. **Production Capacity** : 200 Kg/day.

Machinery & equipment : The major machinery and equipments are de-ammoniation tank, pot mill, planetory mixerwire cage beater,Boiler,Rubber roller, Drying chamber, cutting machine, Valcanizing chamber, Storage Tank etc.

Raw Material : **The main raw material are, Latex, Sulpher, Potash castor oil soap, amm-oleate, zink oxide, soduim silicofluoride etc.**

Plant Site Area : Land Area of 600 sq. mt.is envisaged.

Manpower Requirement : 10 persons will be needed.

Energy requirement : 20 K.W.

IV. **Investment costs** : **The total cost towards machinery and equipment is estimated at Rs. 300,000/- (Three hundred thousand only).**

However production cost depends on local facilities.

V. **Know-how proposed** : National Small Industries Corporation can undertake the setting up of the unit on Turnkey basis.

I. ***Technology for manufacturing <u>PLASTIC PRODUCTS</u> of different types.***

II. *The final products are various types of goods with desired shapes like table top calender holder, pen stands, small trays etc.*

The manufacturing process involves the melting of PVC granules to plastic state and moulding to shape in moulds of desired and shape.

II. ***Production capacity*** : *350 Tons per annum.*

Required equipment : *Plastic Injection moulding machine, moulding of various shapes and sizes. Scrap grinder, bench grinders, drilling machine are the main machinery.*

Raw materials required : *PVC granules, colours, bought out component like brass, aluminium Screws handles etc.*

Plant site area : *300 Sq.mt. is envisaged.*

Required manpower : *6 persons will be needed.*

Energy consumption : *100 KW.*

IV. *The total cost towards machinery and equipment is estimated at Rs.1,200,000/- (Rupees One Million two hundred thousand only).*

V & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis .*

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of PVC FLEXIBLE PIPES.**

II. The PVC flexible tubes is lighter than the conventional rubber tubes and are more colourful and beautiful, has ageing and wear resistance, and is easy to handle. PVC pipes are also being utilised in new fields such as, agriculture, manufacturing industry, food processing, automobiles etc. The manufacturing process consists of extruding the PVC compound, cooling it and winding. Then it is cut into required length and packed.

III. **Production capacity** : 120 M.T. per annum.

Required equipment : The main machinery consists of PVC single screw Extruder complete with winding unit.

Raw materials required : PVC compound.

Plant site area : A total land area of 150 Sq.mt. is envisaged.

Required manpower : 5 persons will be needed.

Energy consumption : 50 KW.

IV. The cost towards machinery and equipment only is estimated at Rs.3,50,000/- (Three hundred fifty thousand only). However the production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and prepare a detailed project report.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture RIGID PVC PIPES.**

II. Due to their light weight, ease of installation, resistance to corrosion, high durability, non toxic nature, low pressure drop, these pipes are fast replacing steel pipes in domestic and industrial electrical installation etc. For making rigid PVC pipes unplasticised PVC compound is used and extrusion process is employed. The continuous rigid pipe thus comming out of the system is cooled and, as it can not be wound, is cut by an inline cutting device into pieces of desired length.

III. **Production capacity** : 144 MT per annum.

Required equipment : The main machinery and equipment are Twin screw Extruder, High speed mixer, weighing balance, testing equipments etc.

Raw materials required : PVC resin, DOP, Colours, Stablizer etc.

Plant site area : 1,000 Sq.mt. of land area is required.

Required manpower : Seven persons will be needed.

Energy requirement : 8,000 KW.H.

IV. The total cost towards machinery and equipment only is estimated at Rs.9,00,000/- (Nine hundred thousand only).

However the production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and prepare a detailed project report.

13 Indian Rupees = 1 US $

I. **Technology for the Production of Polythene Bags.**

II. Polythene Bags are used for packing chemical, Pharmaceuticals, textiles, foodstuff, shoes, books etc. Polythene granules are fed to the hopper of the extruder where it melts extrudes and is blown by air to a required thickness. The blown film is cut automatically and is sealed.

III.

Production capacity	:	200 Kgs/day.
Required equipment	:	The main equipment are Extruder, blower, Automatic bag making machine.
Raw materials required	:	Polythene Granules.
Plant site area	:	100 Sq.mt. of land area is envisaged.
Required manpower	:	3 persons are needed.
Energy consumption	:	18 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.200,000/- (Two hundred thousand Indian Rupees only). However production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **PLASTIC WOVEN BAG.**

II. Woven bags, compared with paper bag, and Polyethylene bag, is strong and is suitable for packing and carrying heavy goods. It will not tear or break easily by rough handling.

The production of woven cloth begins with the production of yarn which goes on to weaving.

Weaving can be either flat or circular. Flat weaving is carried on plain power looms and circular weaving is carried on circular looms. The cloth is cut, printed and sewed.

III. **Production capacity** : 250 Kg./day.

Required equipment : Plastic Extruder with accessories, Yarn preparation equipments, plain looms, cricular looms, printing machine, sewing machine are the major machinery and equipment.

Raw materials required : High density to polyethylene granules, Printing ink, sewing thread.

Plant site area : Total land of 600 Sq.mt. is envisaged.

Required manpower : 25 persons will be needed.

Energy consumption : 75 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.25,00,000/- (Twentyfive hundred thousand Indian Rupees).

However production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **PLASTIC BUTTONS.**

II. The final products are buttons made from acrylic sheets and from urea formaldehyde powder, which are important consumer items used in garments dresses. The production process involves cutting of buttons from acrylic sheets by die punching methods. Holes are then drilled in the buttons, which are then polished and packed. Urea formaldehyde moulding power is converted into tablet-like shapes of suitable size and weight in a tabletting machine. These tablets are preheated in an oven and then compression moulded into buttons using a semi-automatic machine. After drilling of holes, the buttons are buffed and packed.

III. **Production capacity** : 150,000 gross per annum. approximately.

Required equipment The main machinery required consist of acrylic sheet cutting machine, drilling machine, urea formaldehyde powder tabletting machine, semi-automatic compression moulding machine, polishing barrel, over etc.

Raw materials required : Acrylic sheets, urea formaldehyde moulding powder.

Plant site area : Covered area of 150 Sq.mt. is required.

Required manpower : Direct labour required is about five persons.

Energy consumption : 15 KW.

IV. The total investment on plant and machinery is approximately Rs.250,000/- (Indian Rupees two hundred and fifty thousand only).

However, the production cost will depend upon availability of local resources and facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis.

13 Indian Rupees = 1 US $

I. ***Technology for the manufacture of PVC FOOTWEAR***

II. *Because of its low cost and washable qualities, PVC (Poly Vinyle Chloride) footwears are preferred by masses. These can be made in all sizes. As per design of footwear to be manufactured, the moulds are obtained and fitted in the machine. PVC granules are fed through the containers. The granules are injected into the moulds in paste from and solidifies there. The moulds open up automatically and Footwear is taken out. Excess material is ready for cleaning and packing.*

III.

Production capacity	:	*90,000 pairs per annum.*
Required equipment	:	*The machines requires are Two station PVC injection moulding machines, moulds etc.*
Raw materials required	:	*The main raw material required is PVC granules, colour etc.*
Plant site area	:	*Covered area needed is 250 Sq.mt.*
Required manpower	:	*Four persons will be needed.*
Energy consumption	:	*10 KW.*

IV. *The cost towards machinery and equipment only will be Indian Rs.2,00,000.*

V & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis .*

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of SPECTACLE FRAMES**

II. Production of spectacle frames from celluloid sheets with or without reinforcement, which are available in different thickness, sizes, shades and colours, is envisaged. Spectacle Frames of all possible sizes, thickness 4 mm - 8 mm can be manufactured.

Production process: The celluloid nitrate/acelute sheets are cut into the required size for the front and side. The fronts are then worked to a designed shape and grooves are cut. Similarly the sides are processed and wire reinforcement is carried out under heat & pressure. These are polished and assembled and finally nose fixing and buffing is carried out.

III.

Production capacity	:	60,000 frames per annum.
Required equipment	:	The main machinery require are Circular Cutting Saw, Profile cutting machine, Milling Machine, ire reinforcing machine, Polishing Drum, Buffing machine etc.
Raw materials required	:	Celluloid Nitrate Sheets, ing material, Reinforcing wi Rivets, Acetone, Thick white oil, Nitric Acid, Sulphuric Acid etc.
Plant site area	:	Covered area of 200 sq.mt. wili be required.
Required manpower	:	Twenty persons will be needed.
Energy consumption	:	20 K.W.

IV. The total cost towards Machinery and Equipment is estimated to be Indian Rupees 1,50,000/-.

Production cost will depend upon the local facilities available.

V.-VI National Small Industries Corporation,Okhla,New Delhi, India, can undertake the setting up of the unit on Turnkey basis.

I. Technology for the manufacture of **Blow moulded Plastic Containers** used for storage of water and household commodities.

II. **Production Process:** Plastic material in granules form are subject to heat and pressure in an extruder and molten plastic is extruded in the form of hollow tube (Parison). Air is then blown into the hollow tube to force it against the sides of a mould as per shape of the article.

III. **Production capacity** : 48 M.Tons/per annum.

Required equipment : Extrusion blow-moulding machine set, compressor (100 psi), water pump, moulds and dies.

Raw materials required : HDPE/Polypropylene/PVC granules, colour pigments, etc.

Plant site area : Land 400 Sq.mt.

Covered Space : 250 Sq.mt.

Required manpower : 8 Nos.

Power required : 25 HP

IV. **Capital investment** : Rs.10,00,000/-.

Cost of production : Rs.16,00,000/-.

V. Know-how.

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.
2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.
3. M/s. Brimco Plastic Machinery Corporation,
Kandivil Industrial Estate, Bombay-400 067.
4. M/s. Bolani Engineering Corporation,
402, Prabha Devi Industrial Estate, Bombay-18.

I. **Technology for the manufacture of PVC RAINCOATS**

II. The final products are PVC Raincoats, which are waterproof, lightweight and durable and thus extremely popular with men, women and children. Moreover, these can be manufactured in various colours and gay designs printed on them, thus enhancing their visual appeal and hence saleability.

Production process: The production process is very simple. Sheets or multi-layer films of PVC are produced on the automatic co-extrusion multi-layer film plant. These can be screen-printed. These sheets are then cut into patterns and thermo-welded into garment-like shapes. Buttons, zips, elastic tapes etc. are affixed and the product is ready for packing.

III.

Production capacity	:	24000 pieces per annum.
Required equipment	:	Includes the co-extrusion multi-layer film plant, high frequency welding machine, screen printing equipment measuring/cutting equipment and hand tools etc.
Raw materials required	:	PVC Compound, buttons, zips, elastic tapes, printing ink etc.
Plant site area	:	200 sq. metres of covered area is required.
Required manpower	:	Direct labour of about 8 persons.
Energy consumption	:	50 K.W.

IV. The total investment on machinery and equipment is approximately Rs.1,600,000/- (Indian Rupees One million six hundred thousand only). The production cost. will, however, depend upon availability of local resources and facilities.

V&VI. The National Small Industries Corporation,Okhla,New Delhi, India can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees = 1 U.S. $

I. **Technology for the manufacture of LAUNDRY SOAP used for laundry and household purposes.**

II. **Production process:** The three main conventional methods of producing soap are: a) Cold process, b) Semi boiled process & c) Full boiled. Production process involves heating fatty oil in a pan slowly, addition of caustic soda solution in small quantities at a time, maintaining moderate heat, maintaining the charge in a homogenous condition by addition of water, if need be. On completion of saponification, soap charge is allowed to cool and transfer to frames for setting. After cooling soap is cut to bars and tablets.

Builders and fillers such as sodium silicate are added during process of manufacture in the pan wherever required.

III.	**Production capacity**	:	300 M.Tons per annum.
	Required equipment	:	Boiling kettle, Cylindrical pans, stirring laddles, cooling frames, cutting machine, stamping machine etc.
	Raw materials required	:	Rosin, Tallow/Fatty oils, Caustic Soda, Sodium Silicate.
	Plant site area	:	Land:300 sq.mt. Covered space: 150 sq.mt.
	Required manpower	:	15 Nos.
	Energy consumption	:	5 HP
iV.	**Investment costs**	:	Rupees 0.6 million.
	Production costs	:	Rupees 2 million
V.			Know-how
VI.	**Contact addresses**	:	1.Development Commissioner,Small Scale Industries,Nirman Bhavan,New Delhi-110 2.National Small Industries Corporation,Okhla, New Delhi-110020 India.

13 Indian Rupees = 1 U.S. $

I. Technology for the manufacture of **PRINTING INK.**

II. The final product is printing ink packed in tin containers, meant for both letterpress and offset use. Production of both coloured and black ink for printing on paper as well as tin is envisaged.

The production process is very simple indeed. Pigments, Extenders and other chemicals are mixed with the binder in certain proportions in a mixer. The mixed paste is then ground in the Triple Roll Mill. The method of grinding by this machine consists of passing the mixed paste over three rollers which are close together but driven at different speeds. The principle behind the operation is crushing and shearing produced by different speed of rollers and thus the desired dispersion of pigment in the media is achieved.

III. **Production capacity** : 300 tons/year.
(Black Ink - 270 tons.
Coloured Inks - 30 tons.)

Required equipment : The main machinery required are the triple roll mills, the planetary mixer, an electrically operated heating kettle, weighing scale etc.

Raw materials required : Various pigments, extenders and other chemicals.

Plant site area : Covered area of about 600 Sq.mt. is required.

Required manpower : The total direct labour required for the unit is about twelve persons.

Energy consumption : 20 KW.

IV. The total investment required in machinery and equipment only is approximately Rs.1,250,000/- (Indian Rupees one million, two hundred and fifty thousand only).

However, production costs will depend upon local availability of facilities.

IV & V. *The National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis.*

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of <u>WAX CANDLES.</u>**

II. Wax candles are a popular means of illumination in Churches, religious places, hotels and restaurants and in homes&during power failures. The candles are available in various sizes. Wax candles are made by melting wax and mixing colour and chemicals to obtain specific properties. The melt is poured into the moulds. Before moulding wicks are put into the moulds. After cooling the candles are taken out and packed.

III. **Production capacity** : 150 Kg./day.

Required equipment : Moulding machine, heating vessels, are the major machinery and equipment needed.

Raw materials required : Stearic acid, ax, Colour etc.

Plant site area : 150 Sq.mt. land area is envisaged.

Required manpower : 10 persons will be needed.

Energy consumption : 2 KW.

IV. The total investment towards machinery and equipment is estimated at Rs.80,000/- (Indian Rupees Eighty hundred thousand only).
However the production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis .

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of Glue and Gelatine.**

II. Glue is a form of Gelatine extracted from bones and hides. This finds wide use as a general adhesive where a strong, durable, fast setting adhesive is desired. The major use of animal glue can be, as adhesive, composition and colloidal application and as a sizing agent.

The process consists of heating washed bones and fleshings with lime and water. The bones are crushed and the acid treatment is given. These are washed and again lime treatment is given where collegan is separated and washed with water and then with dilute hydrochloric acid. Collegan is then hydrolyzised, dried and pulverised.

III. **Production capacity** : 300 MT/ annum.

Required equipment : The main machinery and equipment are Evaporators, Cooker, Wooden VATS, Disintegrator, Boiler, Air compressor, Emulsifier, Tanks etc.

Raw materials required : Bones & Fleshings, slaked lime, calcium chloride, hydrochloric acid, bleaching powder, soda ash, are the major raw materials needed.

Plant site area : A land area of 600m^2 will be required.

Required manpower : 30 persons will be needed.

Energy consumption : 33 KW.

IV. The total investment towards machinery and equipment only is Rs.40,00,000/- (Four million Indian Rupees).

However production cost depends upon local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on Turnkey basis.

I. **Technology for the manufacture of SAFETY MATCHES.**

II. This is a very commonly used item. Practically all the houses need them. The match sticks can either be of Timber or Wax.

The Potassium chlorate with other chemical is homogenised in a ball mill. The match sticks are placed in the wooden frame and are clipped in the above solution where the head formation takes place. Inner and outer boxes are made separately. On the sides of the outer box the above solution is applied. When the solution dries out the sticks in the inner box and is covered without case.

III. **Production capacity** : 500 Gross per day.

Required equipment : The major machinery and equipment are inner box making machine, Outer box making machine, Side painting machine, Frame filling machine, Peeling machine, Chopping machine, Ball mill, Splint drier, Boiler etc.

Raw materials required : Timber, Paraffin wax, Potassium chlorate, Glue, Mixed chemicals.

Plant site area : A total land of 700 Sq.mt. will be needed.

Required manpower : A total of 10 persons will be required for the unit.

Energy requirement : 30 H.P.

IV. The total cost towards machinery and equipment is estimated at Rs.25,00,000/- (Twenty five hundred thousand Indian Rupees only).

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis or provide know-how.

I. **Technology for the manufacture of <u>OIL EXTRACTION (from peanuts)</u>**

II. Peanut oil is vegetable edible vegetable oil and is used for cooking purposes.

The process of oil extraction involves first seed preparation i.e. opening of shell, and then extracting in the oil expeller. Then it is filtered refined and packed.

III. **Production capacity** : One ton per day crushing capacity.

Required equipment : The major machinery and equipment are Decorticator, oil expeller with steam kettle, boiler, filter press, storage tanks, weighing scale, testing apparatus etc.

Raw materials required : Peanuts, refining chemicals.

Plant site area : Land area of 350 Sq.mt. will be needed.
Required manpower : 8 persons will be needed.
Energy consumption : 40 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.4,00,000/- (Four hundred thousand Indian Rupees only).

However the production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and take up preparation of detailed project report.

13 Indian Rupees = 1 US $

I. **Technology for Electroplating Unit.**

II. Electroplating is a process by which a protective layer of metallic deposition is done on item which otherwise is prove to rust etc. Besides it being protective it gives good shining look.

The item, to be electroplated is cleaned and washed and pickling is carried out. When the item becomes free from rust and grease it is placed in the electroplating bath. The amperage in the bath is adjusted and the time, depending upon the thickness required is allowed. After plating the item is dried and polished.

III. **Production capacity** : Depends upon the job to be executed.

Required equipment : The major machinery and equipment are Silicon rectifier, Polishing machine, Plating Tanks, Pickling Tanks, Bus Bar Installation, Centrifugal drier, Misc. accessories etc.

Raw materials required : The main raw materials are Electroplating chemicals and Polishing materials.

Plant site area : Land Area of 350 Sq.mt. is envisaged.

Required manpower : 12 persons will be needed.

Energy consumption : 30 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.3,20,000/- (Three hundred twenty thousand Indian Rupees).

However production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Smoke Coil Mosquito Repellent.**

II. **Production Process:** The final product is Smoke Mosquito Repellent which can be burned like incense sticks. These, when placed in a room, give rise to mild fumes which drive away mosquitoes. The fumes have no obnoxious odour and are harmless in tthe shape of spiral coils so that they burn for as long as possible. The production process consists of first, pulverization of the raw materials such as extracted residue of pyrethrum or powdered dried pyrethrum flower and sawdust of cedar or cypress. This is achieved in an atomiser. A fixed amount of binder is added to the pulverized material. The mixture is blended thoroughly in a mixer. This is then fed into a kneader and after adding pigment, antimould preservative and water, the whole mass is kneaded thoroughly. A fixed amount of pynamin or pynamin forte and emulsifier is blended with the kneaded mixture, The amount of water required has to be carefully adjusted. The mixture is broken into particles in a crusher and is made as uniform as possible. Then it is formed into the shape of a board of fixed width and thickness. The board is cut into proper sizes and punched out into the proper shape by the mould punching machine. After drying to a water content of approximately 10%, the product is packed, usually 10 spirals to a box.

III.	**Production capacity**	:	**120 tons per year**
	Machinery & equipment	:	The main machinery required are the atomiser, mixer, kneader, crushing, extruder, size cutting machine, mould punching machine, a conveying system, dust collector, boiler etc.
	Raw Materials	:	**Antimould, Green pigment for colouring, extracted residue of pyrethrum, sawdust, Machilus Thunbergil, binder etc.**

	Plant site area	:	**Covered area of about 200 sq. metres is required**
	Required manpower	:	The total direct manpower required for the unit is 10 persons.
	Energy requirement	:	20 K.W.
IV.	**Investment costs**	:	The total investment requied for the unit in machinery and equipment is approximately Rs.600,000/- (Indian Rupees Six Hundred Thousand only). However, production costs depend upon local availability of facilities.
V & VI.	**Know-how proposed & Contact Addresses**	:	The National Small Industries Corporation, India, can undertake the setting up of the unit on Tunkey basis or provide know-how. National Small Industrial Corporation, Okhala, New Delhi-110020. India.

13 Indian Rupees= 1US $

I. Technology for the manufacture of **Bone Meal** used in formulation of animal feed, poultry feed and also for manure.

II. **Production process:** Bones are cut in small pieces and fed into bone digester with adequate water level for digestion at a steam pressure of 75 pounds per sq.inch. The digested material is cooled and later pressed with a round roller and dried. Further grinding is done to required mesh in a disintegrator.

Sterilised Bonemeal: Bones cut to small sizes are washed in alkali solution and later immersed in a solution of sodium hydroxide in a pit for a period of 10 to 12 days till the bones disintegrate into a white paste. By using water for washing and cleaning, alkali is removed from the paste and further washed in a $\frac{1}{2}$% solution of hydrochloric acid to achieve a neutral PH. The paste is then separated by suspending through cloth bags, dried and packed.

III.	**Production capacity**	:	**Bonemeal** - Digested Bonemeal 250 MT p.a. **Sterilised Bonemeal** - 150 MT p.a.
	Required equipment	:	Bone digesters, Disintegrators, tools and equipment.
	Raw materials required:		Raw bones, sodium hydroxide, hydrochloric etc.
	Plant site area	:	Land : 500 Sq.mt. Covered space : 300 Sq.mt.
	Required manpower	:	15 Nos.
	Energy consumption	:	10 HP and fuel for digester.
IV.	**Investment costs**	:	Rs.6,00,000/-
	Cost of Production	;	Rs.15,00,000/-
V.			**Know-how.**
VI.	**Contact Addresses**	1.	Development Commissioner, (Small Scale Industries), Nirman Bhavan, New Delhi-110 011.

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2. *National Small Industries Corporation,*
   Okhla, New Delhi-110 020 INDIA.
3. *VAP Corporation Limited,*
   Industrial Area, UDHNA (SURAT),
   GUJARAT. INDIA.
4. *M/s. Batliboi Co. Ltd.,*
   Dr. V.P. Gandhi Marg, Fort,
   BOMBAY. INDIA.

13 Indian Rupees = 1 US $

I. **Technology for the bottling of SOFT DRINKS.**

II. The final product is bottled soft drinks, which are popular thirst quenchers as well as beverages which are well liked by youngsters. These are generally produced by adding sugar syrup and carbon dioxide gas to a soft drink concentrate. The empty, used bottles are usually collected from retailers and washed, filled and sent back to the market for sale. The production process is very simple. Potable water is softened if required and treated to achieve a high degree of purity. The water used for washing of bottles is also treated. A sugar syrup is made and this is mixed with the concentrate in the mixing unit. After proper blending, the drink is carbonated. The bottles are washed automatically. Now they are filled and immediately crown-corked in the automatic filler-crowner. Now they are ready for despatch to the market, usually in wooden crates.

III.

Production capacity	:	36,000 bottles/day. (200 ml. bottles)
Required equipment	:	The main machinery required are the automatic bottle washer, automatic filler crowner, Blending and carbonating unit, syrup concentrate mixing unit, water treatment plant, Carbon dioxide supply equipment, conveying equipment etc.
Raw materials required	:	Soft drink concentrates, sugar, crown corks, bottles etc.
Plant site area	:	Covered area of about 800 Sq.mt. is required.
Required manpower	:	The total direct labour required for the unit is forty persons.
Energy consumption	:	100 KW.

IV. The total investment required in machinery and equipment only is estimated Rs. 5,000,000/- (Indian Rupees Five million only). However, production costs will depend upon local availability of facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis .

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of EGG/FRUIT TRAYS.**

II. *The final products are egg trays and fruit trays moulded from paper pulp, designed to carry eggs/fruits in cavities of suitable sizes. These trays can be used for short-term storage of eggs/fruits as well as packaging for transporting over long distances with reduced chances of breakage (for eggs) and damage to fruits which reduces their saleability.*

Production process: *This is an automatic process controllable from one centralised control panel. The waste paper based raw material is fed to the hydrapulper. The pulp thus formed is transferred to the pulp chest agitator. From here, the pulp is fed to the moulding machine, where the trays are formed. The wet trays are conditioned in the drying unit. After drying, the trays are stacked and packed.*

III. **Production capacity** : *1 Million egg trays per annum (The number of fruit trays that can be manufactured will be somewhat less).*

Required equipment : *The main machinery required includes a hydrapulper, an automatic moulding machine and a drying chamber. Other equipment includes pulp conveying systems, a control panel etc.*

Raw materials required : *Waste paper, soluble wax, Aluminium Sulphate, colouring matter etc.*

Plant site area : *A covered area of 250 Sq. metres will be required.*

Required manpower : *Direct labour of about 5 persons will be required.*

Energy consumption : *300 KW.*

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IV. The total investment on machinery and equipment alone is about Rs.750,000/- (Indian Rupees Seven hundred and fifty thousand only). The production cost will, however, depend upon the availability of local resources and facilities.

V. The National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on turnkey basis.

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **CATTLE & POULTRY FEED.**

II. **Production Process:** Animal n utrition is a highly developed science and a lot of Technology is involved in the. production of suitable animal feed. Optimum diet formulae have been evolved, best suited to every need.

Animal Feed is a high Protien supplement easily digestible and non-toxic. It is consistent, uniform in quality and economical.

The Process involves cleaning of the material, size reduction in Feed Mill Mixing of the material as per the Formulae and finaily packing.

III.	**Production capacity**	:	2400 Tonnes per annum.
	Required equipment	:	The major machines are Feed Grinder, Mixer. Bag closing machine, Grain cleaner, weighing, Balance etc.
	Raw materials	:	The major raw material are vegetable Proteins, Animal Proteines, Fishmeal, Bone meal etc. Maize, Milo, Barley etc. Wheat bran, rice bran, mollases, Vitamins and minerals.
	Plant site Area	:	a covered Area of 600 sq.Mtrs. will be needed.
	Manpower	:	**Nine persons will be needed for smooth running of the Unit.**
	Energy consumption	:	60 K.W.
IV.	**Investment costs**	:	The total cost towards machinery and equipment only is estimated to be Rs. 5,00,000/-. Production cost depends upon local facilities available.

V.6. **Know-how proposed** : The National Small Industries Corporation, India can undertake the setting up of the Unit on Turnkey basis.

13 Indian Rupees= 1 US $

I. Technology for the PRODUCTION OF BREAD.

II. Bread is an important bakery product for mass consumption and has become important item of nutritional value. Usually it is sold in packing of 400 gms. It is made with flour, sugar, salt, milk, vegetable oil.

The process involves mixing of ingredients in desired proportion and is allowed to ferment. The aough is divided into uniform size and allowed to rest. After intermediate proofing the dough pieces are moulded and are put in the greased pans. The pans are placed in proof box to get the right extent of final proof. Finally the dough is baked in the oven. The breud is then sliced and packed.

III. **Production capacity** : 200 loaves/400 gms/day.

Required equipment : The major machinery and equipments are Dough Kneader, Dough dividing and Rounding machine, Dough moulding machine, Dough proofing box, Baking Oven, Bread slicing, Wrapping and Sealing machine.

Raw materials required : Flour, Sugar, Salt, Yeast, fat oil, skimmed milk powder are the main ingredients required.

Plant site area : Land Area of 750 Sq.mt. is envisaged.

Required manpower : 10 persons will be needed.

Energy consumption : 20 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.250,000/- (Two hundred fifty thousand Indian Rupees).

V & VI National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of GLASS MIRRORS.**

II. Glass mirrors are a household item and are manufactured by a process known as silvering of mirror. The glass sheets are cut to desired size and silver solution is sprayed with the help of spraying gun. Afterwards the copper solution is sprayed and glass is cleaned.

III. **Production capacity** : 4,50,000 Sq.ft. per annum.

Required equipment : Air compressor, spray guns, moisture separator, Exhaust fan, Agitator, Demineralizing water plant, storage tanks, mirror drying racks etc.

Raw materials required : Glass sheets, silver nitrate, concentrated silvering solution, copper sulphate, sodium potassium tortarate, zinc sulphate, zinc dust, glass cleaning powder, special concentrated silvering solution etc.

Plant site area : Land area of 250 Sq.mt. is envisaged.

Required manpower : 25 persons will be needed.

Energy consumption : 10 KW.

IV. The total cost towards machinery and equipment only is estimated to at Rs.1,50,000/- (one hundred fifty thousand Indian Rupees only). However cost of production depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how .

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of THERMOMETERS.**

II. Thermometer is a device for measuring the temperature. Mercury filled glass thermometers are most popular in Laboratory and Industry, Test house, Educational Institute, Pharmaceutical concerns and various other establishments engaged in research and development work.

Glass capillary tubes of suitable dimensions are cut to sizes, bulb is formed, mercury is filled construction is made, marking and caliberations are done and ends are sealed.

III. **Production capacity** : 1,00,000 Nos. per annum.

Required equipment : The major machinery and equipment are Petrol Gas Plant, Mercury filling Unit, Graduation machine, Pentograph, Ribbon Burner, Hygrometer, Air compressor, Testing equipments etc.

Raw materials required : Round capillary, Mercury, Petrol Acid, Wax, Colour etc.

Plant site area : A total land area of 150 Sq.mt. is envisaged.

Required manpower : 17 persons will be needed.

Energy consumption : 5 KW.

IV. The total investment towards machinery and equipment is estimated at Rs.1,20,000/- (One hundred twenty thousand Indian Rupees).

However the production cost depends upon the local facilities.

V & VI National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

I. **Technology for the manufacture GLASS BOTTLES.**

II. Glass bottles are available in different sizes and shapes the envisaged unit is semi automatic and is capable of making Glass Bottles, in different shapes and sizes i.e. from 10 ml. to 500 ml. capacity.

The manufacturing process consists of melting, washed, crushed and sieved broken glass, with sand, lime stone, dolomite and felspar. The melt is gathered and is blown with the help of foot type bottle blowing machine. The bottles are then heated in electric furnance for stress removing. The bottles are inspected and defective bottles are sent pack for crushing and recycling.

III. **Production capacity** : 500 - 1,000 Kg. per day.

Required equipment : The major machinery and equipment are washer, crusher, Batch mixer, Melter, Blowing machine, Electric anealing furnance strain viewr etc.

Raw materials required : Broken Glass, Silica Sand, Lime stone, Dolomite, Felspar, Borex, Potassium nitrate, Sodium Sulphate, Arsenic Oxide etc.

Plant site area : 100 Sq.mt. of land area is envisaged.

Required manpower : 30 persons are needed.

Energy consumption : 40 KW.

IV. Total cost towards machinery and equipment only is estimated at Rs. 6,00,000/- (Six hundred thousand Indian Rupees only).

However, the cost of production depends upon the local facilities.

VI National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

13 Indian Rupees = 1 US $

I. Technology for manufacturing of **Scientific Laboratory Glassware.**

II. Scientific glass apparatus plays a very important part in Scientific research. Almost every institution connected with science and technology e.g. Schools, Colleges, Technical Training Institutions, Research laboratories, hospitals, Chemical plants, Electronic/Pharmaceutical Industry require scientific glassware.

The manufacturing of scientific glassware, requires softening of glass tube (enough for working) by heating on a flame then blown and pressed into desired shape. Thereafter annealing is done. In case of graduated vessels like, burettes, pipettes, proper caliberation is done afterwards. Graduation is carried out with special equipment.

III. **Production capacity** : 20,000 pcs. per annum of burettes, pipettes, flasks, measuring cylinder, Funnels, Beakers etc.

Required equipment : The major machinery requirements are, petrol gas plant, burners, cutting machine, glass lathe, grinding machine, graduating machine, Pantograph, strain viewer etc.

Raw materials required : Corning Glass tubes, flasks, hydrochloric acid, paraffin wax, grinding powder are the major materials required.

Plant site area : Approximately 200 Sq.mt. of covered area will be needed.

Required manpower : About 15 persons will be needed.

Energy consumption : Power - 7.50 KW units.
Fuel - 2,000 Lt. of SBP spirit.
Oxygen cylinders - 32 Nos.

IV. **Investment cost** : The cost of machinery and equipment only will be Indian Rs.3,50,000/-.

Production cost : Will depend upon local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis.

I. Technology for the manufacture of **CLAY BRICKS & TILES.**

II. The final product is clay bricks, ridge-type tiles and roofing tiles used extensively for building purposes. The production process consists of the making up of clay using proper constituents in proper ratio. These are mixed in the mixer after proper crushing and sieving. Bricks are cast in individual moulds and put into the oven for firing. The ridge ctiles are formed using dies in the hand screw press while the roofing tiles are made in the heavy duty revolving press. They are then fired in the kiln.

III. **Production capacity** : 10 million/annum.

Required equipment : The main machinery required for this unit consists of the Clay crushing and sieving machine, mixing machine, hand screw press, heavy duty revolving press, conveyor type industrial furnace etc.

Raw materials required : Clay etc.

Plant site area : 1800 Sq.metres.

Required manpower : The direct labour required for this unit is 40 persons.

Energy consumption : 120 KW.

IV. The total investment for this unit on machinery and equipment alone is approximately Rs.1,600,000/- (Indian Rupees one million six hundred thousand only). However, the production costs will depend upon the availability of local resources and facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on turnkey basis or provide know-how.

I. **Technology for FABRIC PROCESSING (Power looms)**

II. The final product is grey cloth for various uses. The operation involved to produce the fabric are winding of yarn on drums. Winding of yarn on Bobbins, weaving and inspection.

III. **Production capacity** : 2,25,000 Metres of cloth per annum.

Required equipment : Power looms Sectional winding machining, yarn winding machine, Hank/cone winding machines are the main machinery involved.

Raw materials required : Cotton yarn.

Plant site area : 2,000 Sq.m. is envisaged.

Required manpower : 30 persons required.

Energy consumption : 60 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.3,200,000/- (Rupees three million two hundred thousand only).

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis or provide know-how.

13 Indian Rupees = 1 US $

I. Technology for manufacturing of HOSIERY AND KNITWEAR.

II. Hosiery and Knitwear includes under-garments like under pants, cotton vests etc. and outer wears like children suits, gents coat etc.

Cotton knitted cloth is spread on the cutting table and required size of Garments are cut. These cut pieces are first stitched with lock stitch sewing machine then are overlocked. The stitched garments are pressed and packed.

III. **Production capacity** : 36,000 doz. of Knitwear per annum (Assorted).

Required equipment : The major machinery and equipment required are Overlocking machine, Chainlock stitching, Flat Lock stitching, Folder machine, Rib Cutting Sewing machine, Electric Press etc.

Raw materials required : Cotton Knitted fabric, sewing thread, Elastic Tape are the main raw material required.

Plant site area : Land Area of 450 Sq.mt. is envisaged.

Required manpower : 31 persons will be needed.

Energy consumption : 15 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.150,000/- (One hundred fifty thousand Indian Rupees).

However the production cost depends upon the local facilities.

V&VI National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

I. **Technology for the manufacture of <u>SPORTS NETS</u>**

II. *Sports nets are important items for various games e.g. Badminton, Volleyball, Table Tennis, Hockey, Football, Basketball, and Cricket (net practice). These nets may be of cotton or nylon yarn. Cotton yarn or Nylon yarn is required as desired for the given net. These are wound with hand operated twisting machine and knitted with hand. Then they are sewed on to cotton tape or rope. The thickness of thread depends on the type of net to be made. The net may be dyed if required.*

III. **Production capacity** : *50 Nets per day (assorted).*

Required equipment : *The main machinery and equipment are Yarn - twisting machine, Industrial sewing machine.*

Raw materials required : *Cotton Yarn, Nylon Yarn, Niwar, Rope.*

Plant site area : *The total land requirement 175 Sq.mt.*

Required manpower : *12 persons will be needed.*

Energy consumption : *2 KW.*

IV. *The total investment required in machinery and equipment only is estimated at Rs.30,000/- (Thirty thousand Indian Rupees only).*

V & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.*

13 Indian Rupees = 1 US $

I. Technology for the manufacture of **Nylon socks.**

II. **Production Process:** Crimped nylon yarn and rubberised thread on bobbins are placed on the stand of automatic socks making machine. The automatic machine will have arrangement for knitting designs, heels and toe, and also elastic. Knitted socks are linked on a linking machine. Nylon socks are passed on frames and packed.

III. **Production capacity** : 12,000 doz. per annum.

Required equipment : Double cylinder automatic socks knitting machine, automatic plain knitting machine, linking machine, electric iron, tools and fixtures.

Raw materials required : Crimped nylon yarn, rubber yarn, cotton yarn.

Plant site area : 200 Sq. mt.

Required manpower : 5 to 10 Nos. depend on the number of machines.

Energy consumption : 10 to 20 HP.

IV. **Investment costs** : Rs. 5,00,000/-.

Production costs : Rs.10,00,000/-.

V. Know-how.

VI. **Contact Addresses**

1. Development Commissioner,
(Small Scale Industries),
Nirman Bhavan, New Delhi-110 011.

2. National Small Industries Corporation,
Okhla, New Delhi-110 020 INDIA.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of DRESS MATERIAL.**

II. The type of cloth that can be made on plain overpick power looms with dobby attachment is varied. In the grey stage drill cloth, Check "matty casement" tweed cloth can be made, using dyed wrap, it is possible to make Denim, using both warp and weft numerous designed cloth can be woven. Yarn in the form of Hanks is converted into drum/cones. From these weaver's beam is preapred on, sectional warping machine and, bobbins, on Pirn winding machine. The weaver's Beam is mounted on the powerloom, this constitute the weft. Cloth is woven by the interlacing of warp and weft. This is done mechanically by power loom.

III. **Production capacity** : 200,000 m.t. per annum.

Required equipment : The major machinery and equipment are Warping machine, Pirn winding, Dobby, Hank to cone/drum winding machine, Powerlooms.

Raw materials required : Yarn in the form of hanks is the main raw material required.

Plant site area : 450 Sq.mt. will be needed.
Required manpower : 20 persons
Energy consumption : 40 K.W.

IV. The total cost towards machinery and equipment is estimated at Rs.15,00,000/- (Fifteen hundred thousand Indian Rupees).

However the production cost depends upon the local facilities.

V. National Small Industries Corporation, Okhla, New Delhi, India, can undertake the setting up of the unit on Turnkey basis as well as provide know-how.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of COTTON SOCKS.**

II. The socks are worn by people with shoes. They can be made in different sizes. Cotton socks can be used in all the seasons where as in summer seasons, it is not possible to use woolen socks and to some extent nylon socks also.

The dyed or bleached yarn is wound on to wooden bobbins or paper cones. These bobbins or paper cones are placed on the socks knitting machine and socks are knitted as per design and size. The toe portion of the socks in linked by hand. The socks are pressed and packed.

III. **Production capacity** : 6,000 dozes per annum.

Required equipment : The major machinery and equipment are Winding machine, knitting machine, and equipments like Pressing labeling etc.

Raw materials required : Cotton yarn, dyed on bleached, Elastic thread, labels etc.

Plant site area : Covered area of 100 Sq.mt. will be required.

Required manpower : Total direct labour required for the unit, is ten.

Energy consumption : 5 KW.

The total investment required in machinery and equipment only is Rs.40,000/- (Rupees Forty thousand Indian Rupees only).

However Production cost depends upon local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of SURGICAL BANDAGES.**

II. Bandage cotton cloth is purified in a series of processes and rendered hydrophile in character besides rendering it free from organic impurities.

The boundle of Bandage cloth is opened and cleaned and is then processed in the Kier to remove the organic impurities and make the cloth hydrophile. It is treated with caustic soda washed bleached and treated with hydrochloric acid to make it neutral. The cloth is washed and in fed to hydroextractor to remove as much water as possible. Subsequently it is dried. Calandering operation is carried out before rolling, cutting and packing.

III.

Production capacity	:	80 M.T. per annum.
Required equipment	:	The main machinery include Bandage Rolling, Bandage cutting machine, Gauge winding machine, over pick looms, Pirn winder, Red winder, warping machine, kier unit, solution tank, hydroextractor, Dryer, Boiler etc.
Raw materials required	:	The main raw materials are yarn, soda ash, caustic soda, liquid detergent, wetting agent, bleaching agent, oil etc.
Plant site area	:	A total land area of 2,500 Sq.mt. is envisaged.
Required manpower	:	23 persons will be needed.
Energy consumption	:	30 KW.

IV. The total cost towards machinery and equipment is estimated at Rs.13,00,000/- (Thirteen hundred thousand Indian Rupees only).

However the production cost depends upon this local facilities.

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V & VI. *National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis .*

13 Indian Rupees = 1 US $

I. **Technology for FABRIC DYING.**

II. In order to provide comfort to the body and glamour the grey cloth need some processing like Bleaching dying and calandering, bleaching is done to get whiteness before dying. Calandering is carried out to give a neat look.

This first step towards the process is to make grey cloth Hydrophilic. Then it is boiled in Kier with some chemicals to remove. Cotton reeds, fatty acids, waxes and lubricants. Also the fabric is sent for bleaching followed by dying and calandering.

Production capacity	:	1000 Mt. per day of fabric processing.
Required equipment	:	Dyeing Jigger, Kier, Hydro-extractor, Boiler, Flat work ironer, Folding machine, cverlock machine are some of major equipments required.
Raw materials required	:	The main raw material are caustic soda, Detergent, Bleaching Agent, Dyeing Chemicals, Starch etc.
Plant site area	:	300 Sq.mt. of covered area is considered optimum for the unit.
Required manpower	:	20 persons will be needed to run the unit.
Energy consumption	:	40 KW.

IV. It is estimated that the total cost towards machinery and equipment only will be Rs.12,00,000/- (Rupees Twelve hundred thousand only). However the production cost depends upon the local facilities.

V & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis as well as provide know-how and formulate detailed project report.

13 Indian Rupees = 1 US $

I. **Technology for the manuf e of SURGICAL COTTON.**

II. The unit will produce Surgical Cotton for use in Clinics, Hospitals, Houses, Cosmetics and Pharmaceutical industries etc. The product would be manufactured in roll form in different packing ranging from 25 gms. to 500 gms. according to the market pattern.

Production process: The cotton is cleaned and impurities are removed first mechanically and fibres are loosened. The other impurities e.g. Fats etc. are removed by treating the cotton with Soda Ash and Caustic Soda under pressure in pressure vessel. The cotton is then bleached and washed and water is removed in Hydroextractor and finally is dried in Driers. After drying the fibres are further loosened and the thin layer of cotton are formed and rolled. These are cut and packed in the desired packing.

III. **Production capacity** : 48 M.T. per annum

Required equipment : The machines required are Kier,Carding machine, Croyten unit,Boiler, Pickering m/c, opener, Drying chamber,Hydro-extractor, Rolling machine,circular cutting machine, Willowing machine, Testing equipments etc.

Raw materials required : The major raw materials are Raw cotton,Caustic Soda, Soda Ash, HCL, Bleaching Powder, Welling Agent, Kraft Paper.

Plant site area : Covered area of 400 sq.mts. will be sufficient.

Energy consumption : 80 K.W.

IV. The total cost towards machinery and equipment is estimated to be Indian Rupees 8,500,000/-.

The production cost will depend upon local facilities.

V.+VI National Small Industries Corporation,Okhla,New Delhi,India can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees = 1 U.S. $

I. **Technology for Vegetable Tanning of Hides.**

II. The wet salted hides are soaked in fresh water and then with detergent. The flesh side is painted with lime/sodium sulphate paste. It is then relimed for number of days. After deliming pretanning is done with 4 per cent sodium hexamete phosphate solution. The PH of the bath is maintained at 2.2 for two days with sulphuric acid. On 9th day the pretanned sides are suspended in the liquor containing wattle extract. The P.H. of the liquor is adjusted to 4.5. On 22nd day goods are bleached with oxalic acid. On 25th day leather is stuffed with tallow and fish oil. In the last goods are hung up for a period of 2 to 3 days and set out nicely on the grain size.

III. **Production capacity** : 200 hides/day.

Required equipment : The major machinery and equipments are wooden drum, buffing machine, glazing machine, staking machine, flelshing machine, scudding machine, baby boiler, cemented pit etc.

Raw materials required : Raw hides, sulphuric acid, lime, sodium sulphate, hydro-chloric acid, Oxalic acid, bleaching agent, detergent etc.

Plant site area : Land area of 2,000 Sq.mt. is envisaged.

Required manpower : 25 persons are needed.

Energy consumption : 15 KW.

IV. The total cost towards machinery and equipment only is estimated at Rs.1,00,000/- (One hundred thousand Indian Rupees).

However production cost depends on the local facilities.

V. & VI. National Small Industries Corporation, Okhla, New Delhi, India can undertake the setting up of the unit on Turnkey basis.

13 Indian Rupees = 1 US $

I. **Technology for the manufacture of LEATHER UTILITY ARTICLES (handbags, money-purse, etc.**

II. **Production process:** By use of patterns according to the design of the samples, leather components are cut to size. Later, they are skived, punched, beaded and then closed. Suitable lining is stiched and attached to the product as per needs. Wherever zips and other fittings are required, they too are attached.

III.

Production capacity	:	Handbags - 7500 Nos. per annum Money Purses - 7500 Nos. per annum
Required equipment	:	Industrial sewing machines, clicking press, stamping machine, skiving machine, handtools and equipment.
Raw materials required	:	Chrome leather, lining leather, zips and other fittings.
Plant site area	:	200 sq. mtrs.
Required manpower	:	10 Nos.
Energy consumption	:	5 to 10 HP

IV.

Investment costs	:	Rs.3,00,000
Production costs	:	Rs.6,00,000

V. Know-how

VI. **Contact addresses** :

1.Development Commissioner(Small Scale Industries)Nirman Bhavan,New Delhi-11.

2.National Small Industries Corporation,Okhla, New Delhi-110020. India

3.Singer Sewing Machines Ltd. Mount Road, Madras-2 India

4. Indo-German Shoe Co. Pvt.Ltd. Kandivili Industrial Estate,Bombay-67 India

13 Indian Rupees = 1 U.S. $