Investment Opportunities in Odisha

Downstream Industries In Steel

ODISHA
NEW OPPORTUNITIES

With 33% of the iron ore in the country and one-fifth of the steel making capacity in India, Odisha presents an excellent opportunity for Ancillary and Downstream sector industries in the Steel sector to set up units in the State.

Ancillary and Downstream industry is a focus sector for the State. With the presence of large mother plants of SAIL, TATA Steel, JSPL, Bhushan Steel, etc in the State and dedicated locations identified at Kalinganagar and Jharsuguda for setting up Ancillary and Downstream parks, Odisha is the preferred destination for Ancillary and Downstream manufacturers in this sector.

Coupled with competitive cost of doing business and best- in class incentive framework, the State offers a compelling value proposition for units in the Ancillary and Downstream sector.

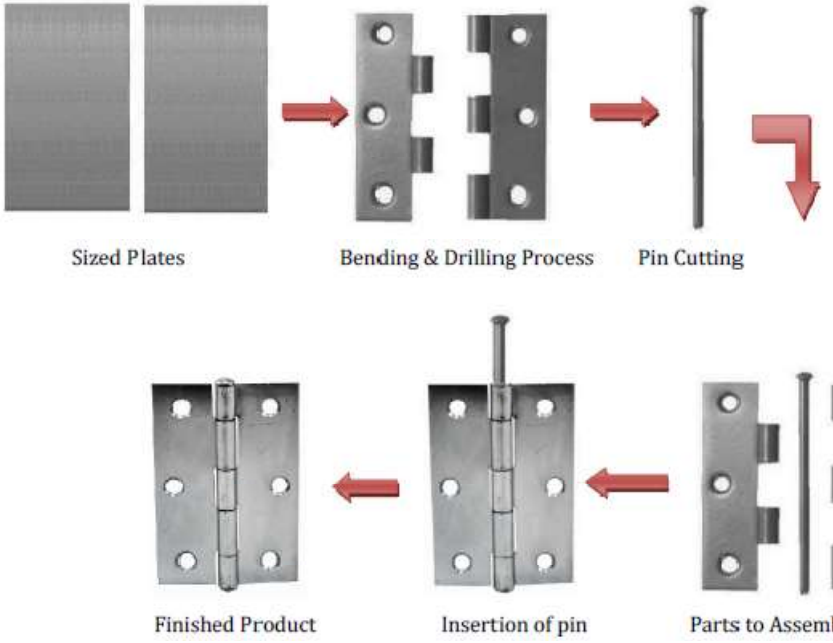
To facilitate the investors in the sector, short profiles have been prepared with key features of various projects that an investor may consider to set up in the State. These project profiles provide information regarding the area required, approximate project cost, process, utility and manpower requirement which would assist the investors in the decision making process. This compendium provides information on 24 such select projects which could be considered for further due diligence by the investors.

I am confident that the investors, particularly in the MSME sector, will find this compendium of 'ready-to-set-up' project profiles useful.

Shri Naveen Pattnaik,
Chief Minister

Contents

1. Manufacturing of Hinges

Name of Project	Manufacturing of Hinges
Area Requirement	600 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 55 - 60 Lakhs b) Plant and Equipment : ~ INR 90 – 120 Lakhs
Project Scale	Capacity – 900 tonnes per year
Process	Depending on the model of the hinge product there will be two to fiveoperations on a single piece of the product.  • Cutting work: - Cutting of the mild steel and metals into size on shearing machine. • Press work: - Blanking, bending and folding of the sheet metal on press using appropriate dies tools to obtain the hinges and the washer parts. • Drilling Work: - After a work piece is laid out and properly mounted on drilling machine, no of holes are drilled as per the required design. • Tumbling work: - Cleaning of rust and removal of sharp edges from the products.
Utilities	• Electricity (Connected Load) – approx. 60 kw • Water about 1,500 m3/ day
Manpower Requirement	26

2. Manufacturing of Link Chains

Name of Project	Manufacturing of Link Chains
Area Requirement	2000 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 40- 45 Lakhs b) Plant and Equipment : ~ INR 55 – 60 Lakhs
Project Scale	Capacity – 900 tonnes per year
Process	Mild Steel wire in coils is set on the de-coiler of wire bending machine. Then wireis fed to automatic wire bending machine where during the feeding wire getstraightened then cut to the required link size and bent to form link. The processrepeats and chain is formed with bent links. Now chains [one by one] fed on tothe electro mechanical butt-welding machine, where open ends of the chainsautomatically welded and deburred. The chains are pickled and cleaned withacid and water. The welded chains are now inspected and tested as per thespecifications laid down in the respective Indian Standards, after this weldedchains are generally packed in wooden cases. The weight of packed chain isapproximately 50 kgs. The defective chain links may be salvaged by gas welding. The chain should be inspected and tested as per the specifications laid down inthe respective Indian Standards. The drawn wire should be of tested quality as per the IS Specifications. The following Indian Standards may also be referred: I S : 226 – 1975: Structural Steel [standard quality] withAmendment IS : 2429 Round Steel short link chain [Electric Buttwelded, I S : 2429 – 1970 [Part II] Calibrated load chain for pulley blocks andother I S : 3109 Short Link Chain, Grade M. I S : 3109 – 1982 [Part II] Calibrated load chain for pulley blocks andother I S : 6216 – 1982 Short link chain, grade – T, Calibrated forpulley I S : 6217 – 1982 Short link chain grade S, Non-calibrated for lifting
Utilities	• Electricity (Connected Load) – approx. 100 kw • Water about 2 m3/ day
Manpower Requirement	17

3. Manufacturing of Welding Electrodes

Name of Project	Manufacturing of Welding Electrodes
Area Requirement	600 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 60– 65 Lakhs b) Plant and Equipment : ~ INR 90 – 100 Lakhs
Project Scale	Capacity – 8 tonnes per day
Process	Wires of different chemical compositions and sizes are obtained from different steelmanufacturers. In electrode making plant, they are chemically cleaned, cut to differentlengths (The selling prices of welding electrodes vary according to length of theelectrodes and the raw material used. There are two methods of applying Flux coating on the core wire, (a) Dipping method. Number of core wires cut to definite length is clamped vertically in a fixture and aredipped in a bath of molten flux. When a suitable thickness of the flux gets adhered tothe core wire, the fixture is raised and the flux is allowed to dry. (b) Extrusion process. • Coating ingredients are mixed up in desired quantities, binder (often sodium silicate) is added and the resultant mass is brought in the form of a thick, viscous, stiff paste. • This paste is shaped in the form of a cylinder which is fed into the extrusion press. • Core wire and thick paste of flux simultaneously under pressure pass through a die. Thus attaching the flux coating on the core wire. The coating thickness depends upon the die opening and can be varied. • As a next step the flux from the gripping end of the electrode is removed by an electrically rotated wire brush; • After which the electrodes are fed to ovens where they are dried and baked to remove excess moisture. • The electrodes are thereafter sorted, wrapped in polythene paper, put into packets, and bulk is boxed into wooden cases. • Packets and boxes generally have information about: electrode coding, electrode size, nature of current and polarity, batch number, name of manufacturer, date of manufacture, etc.
Utilities	• Electricity (Connected Load) – approx. 100 kw • Water about 2 m3/ day
Manpower Requirement	27

4. Manufacturing of Hacksaw Blades

Name of Project	Manufacturing of Hacksaw Blades
Area Requirement	2,000 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 30– 35 Lakhs b) Plant and Equipment : ~ INR 15 – 20 Lakhs
Project Scale	Capacity – 20,000 nos per day
Process	Hacksaw blades (both hand & power hacksaw) are generally made from highcarbon steel or high strength steel strip coils. The blank of required size isobtained by fixing the slitted strip coils on the uncoiler stand of semi-automatic strip cutting machine and holes are punched at both ends. Once hacksaw blanks are cut to the required length and holes are punched thetooth are cut by milling or hobbing process. After the teeth's are cut, the stack ofhacksaw blades are heat treated and tempered to the required hardness. Thefinal step is surface cleaning, painting, printing and packing of the hacksawblades for market supply.
Utilities	• Electricity (Connected Load) – approx. 50 kw • Water about 2 m3/ day
Manpower Requirement	18

5. Manufacturing of Self Tapping Screws

Name of Project	Manufacturing of Self Tapping Screws
Area Requirement	600 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 30 – 35 Lakhs b) Plant and Equipment : ~ INR 35 – 40 Lakhs
Project Scale	Capacity – 1,20,000 Packets of 1,000 Pcs.Per annum
Process	Self-tapping Screws are manufactured on automatic machines. The sequenceof operation are: 1. Making of head, on header machine. 2. Slotting of head, on slotting machine. 3. Rolling of thread, on thread rolling machine. 4. Hardening & tempering of screws, in electric furnaces. 5. Electroplating, in Electroplating Plant. Normally bright zinc plating is done to self-tapping screws. However, nickelplating can also be done, especially when required for resistance against seaweather.
Utilities	• Electricity (Connected Load) – approx. 50 kw • Water about 2 m3/ day
Manpower Requirement	23

6. Manufacturing of Production of Wire Nail

Name of Project	Manufacturing of Production of Wire Nail
Area Requirement	800 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 26 – 31 Lakhs b) Plant and Equipment : ~ INR 50 – 55 Lakhs
Project Scale	Capacity – 400 tonnes per day
Process	The wire in the form of coil with diameters of 0.17 - 6 mm is first cleaned from rustand scale by mechanical scrapper. The cleaned wire in the form of coil is fed intoautomatic heading and pointing machines forming the final nail of desired size. This iscollected for the next processing. The collected piece is further transferred to tumblingmachine for polishing and de-burring of the finished nail ready for packing.
Utilities	• Electricity (Connected Load) – approx. 74,000 kwh • Water about 1,000 m3/ day
Manpower Requirement	24

7. Manufacturing of Corrugated Sheets

Name of Project	Manufacturing of Corrugated Sheets
Area Requirement	3,000 sq m (automatic Line) 200 sqm (manual Line)
Approx. Project Cost	Automatic Line / Manual Line a) Land and Buildings : ~ INR 70 – 75lac / 15 – 17 lac b) Plant and Equipment : ~ INR 70 – 75 lac / 20 – 25 lac
Project Scale	4500 m per day (Automatic line) 500 m per day (manual line)
Process	In the corrugation process sheet metal is pulled off huge rolls and throughrolling dies that form the corrugation. After the sheet metal passes through therollers it is automatically sheared off at a desired length in case of automaticline. The standard shape of corrugated material is the round wavy style, but canbe easily modified to a variety of shapes and sizes by simply changing the dies.Automatic Roll Forming Line consists following parts, while the coil stock ispassing through succession contoured rolls the material bends to its desiredshape, after final shape is achieved profile straighter gives straightness tooutgoing profile 1) De Coiler (5 Ton) 2) Loop System 3) Entry gauge and Roll Forming machine 4) Cutting unit 5) Run out table 6) Integrated Hydraulic power Pack system 7) P L C control system. **Decoiler:**Decoiler is provided to load Raw material coil on its arms & hold the coil andalso generates Drag tension in process. **LoopSystem**:Loop System is incorporated in between 2 line equipment to synchronise linespeed or some time to eliminate tension, stretch, on passing material. **RollForming Line:**Roll forming consists pairs of contoured roll tools. While the coil stock ispassing through succession contoured rolls the material bends to its desiredshape, after final shape is achieved profile straighter gives straightness tooutgoing profile. **Cutting System:**Cutting as Stop Forming line Cuts length +/- 4 mm and very hay line speed cutsthe blank or profile single word. Press is designed to accept type die or troppingdie without slug while cutting. **Integrated hydraulic Power pack system:** To Supply pressurized fluid toall hyd. actuators at desired pressure and quantity.
Utilities	• Electricity (Connected Load) – 30 KW (auto) , 15 kw (manual) • Water about 2 m3/ day
Manpower Requirement	11 (automatic), 6 (manual)

8. Manufacturing of Adjustable Hospital Beds

Name of Project	Manufacturing of Adjustable Hospital Beds
Area Requirement	200 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 20 – 22 Lakhs b) Plant and Equipment : ~ INR 10 – 15 Lakhs
Project Scale	Capacity – 2 Nos. per day
Process	The basic operations involved in the manufacturing of adjustable beds areas follows: i) Cutting & bending of pipes ii) Cutting of MS angles iii) Cutting of strips iv) Welding& Riveting v) Grinding vi) Assembly of elevating mechanism vii) Painting& baking • **Cutting work: -** Cutting of the mild steel and metals into size on shearing machine. • **Press work: -** Blanking, bending and folding of the sheet metal on press using appropriate dies tools to obtain the hinges and the washer parts. • **Drilling Work: -** After a work piece is laid out and properly mounted on drilling machine, no of holes are drilled as per the required design. • **Tumbling work: -** Cleaning of rust and removal of sharp edges from the products.
Utilities	• Electricity (Connected Load) – approx. 20 kw • Water about 2 m3/ day
Manpower Requirement	9

9. Manufacturing of Agricultural Implements

Name of Project	Manufacturing of Agricultural Implements
Area Requirement	1,200 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 40 – 45 Lakhs b) Plant and Equipment : ~ INR 60 – 65 Lakhs
Project Scale	
Process	The manufacturing of proposed products involve various manufacturingprocesses like cutting of steel sections, fabrication, welding, drilling, turningmaking subassemblies, fitting & final assembly etc. where steel sections & otherparts/components like tynes, springs & fasteners be outsourced & purchased as per own design & specifications. The manufacturing also involves inspections at various stages till they are finallyassembled & packed as per their Quality assurance standards/plans.
Utilities	• Electricity (Connected Load) – approx. 60 kw • Water about 3 m3/ day
Manpower Requirement	24

10. Manufacturing of Barbed wire

Name of Project	Manufacturing of Barbed Wire
Area Requirement	1,000 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 40 – 45 Lakhs b) Plant and Equipment : ~ INR 45 – 50 Lakhs
Project Scale	1 tons per day
Process	The barbed wires are made on an automatic machine. The barbed wire is made outof 12/14 SWG MS Galvanized wires. While two main line wires are fed into themachines through its axes another wire is fed across into the pair of line wires toform barbs at required intervals. The line wire twine themselves automatically the point wire after forming thedesired barbs strands with the line wires automatically at the desired distancethus forming the complete barbed wire. As the machine is automatic all its feedingand wire cutting mechanism is controlled by gear movements. The machine ispowered through an electric motor attached to the machine. Once the machine isset up as per the desired settings it goes on working automatically.
Utilities	• Electricity (Connected Load) – approx. 140 kw • Water about 5 m3/ day
Manpower Requirement	8

11. Expanded Metal Mesh Manufacturing Unit

Name of Project	Expanded Metal Mesh Manufacturing Unit
Area Requirement	1,000 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 35 – 40 Lakhs b) Plant and Equipment : ~ INR 35 – 45 Lakhs
Project Scale	9000 MT per year
Process	1. The plate, sheet, or coil is mechanically advanced beyond the fixed bottom diein an amount that is known as the strand width in regular (standard)expanded metal. The top cutting die then descends and simultaneously slitsand cold forms an entire row of half diamonds. 2. The top die then ascends and moves one half diamond right/left as the basemetal moves forward one strand width. 3. The top die then descends, slits and forms another row of half diamonds,completing a row of full diamonds in two strokes. 4. The die then ascends, returning to its normal position and begins the processagain until the full sheet of expanded metal is completed.
Utilities	• Electricity (Connected Load) – approx. 200 kw • Water about 1-2 m3/ day
Manpower Requirement	8

12. Cable Tray Manufacturing Shop

Name of Project	Cable Tray Manufacturing Shop
Area Requirement	1,800 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 40 – 45 Lakhs b) Plant and Equipment : ~ INR 65 – 70 Lakhs
Project Scale	500 tpd
Process	The semi-automatic line could be run for cable tray and covered cable trayproduction continuously punching and cutting at any length. This production line may produce the cable trays of different sizes byreplacing punching moulds. The production line includes uncoiler, leveller device, feeding guide, mainpunching machine, roll forming, cutter with integrated hydraulic system andelectric control system.
Utilities	• Electricity (Connected Load) – approx. 60 kw • Water about 2 m3/ day
Manpower Requirement	19

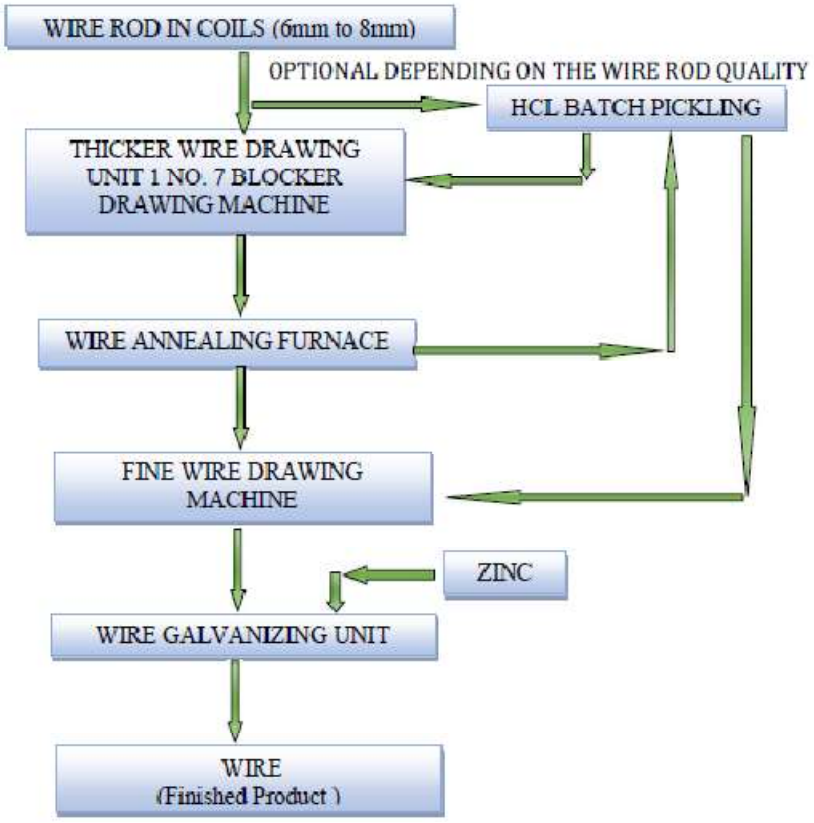
13. Electric Panel Manufacturing Shop

Name of Project	Electric Panel Manufacturing Shop
Area Requirement	300 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 23 – 28 Lakhs b) Plant and Equipment : ~ INR 30 – 35 Lakhs
Project Scale	5 Nos. per day
Process	The Control Panel is sheet metal fabricated in closure open, semi-enclosed ortotally enclosed type, which provide and control electric power to equipment andappliances. Provision for indicating electrical parameters like voltage, current,frequency, power factor etc. will be available on the face of the panel. Regulation ofthe power supply is also possible with the help of auto transformer switches andcircuit breaker. The sheet metal enclosure for the Control Panel is designed and fabricated in theunit. The components are bought out from the reputed sources and fitted atappropriate places on the panel as per manufacturers design. The circuit as per thedesign is laid out and the control panel is tested for the proper functioning as perrelevant specifications.
Utilities	• Electricity (Connected Load) – approx. 20 kw • Water about 2 m3/ day
Manpower Requirement	16

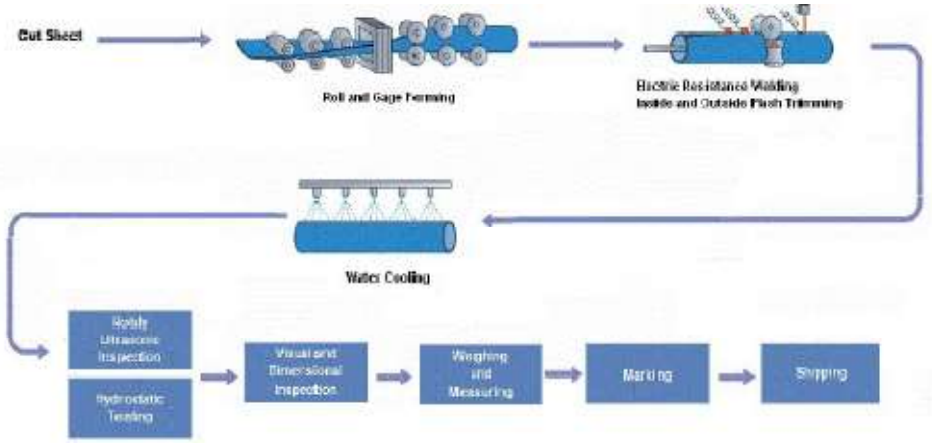
14. Bar Bending & Mesh Making Unit

Name of Project	Bar Bending & Mesh Making Unit
Area Requirement	8,000 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 75 – 80 Lakhs b) Plant and Equipment : ~ INR 16 – 18 Lakhs
Project Scale	60,000 tonnes per year
Process	The bars in straight lengths as well in coils will be stored in the storage area.The bars will be brought from outside to in-shop area bay by trucks / hydra asper the production planning. An in-house Design department for production planning and preparation of shopfabrication drawings has been envisaged with latest state of art software &hardware. Further, the bars in straight lengths or in coils will be fed to the respectivemachines as per the production planning with the help of shop EOT cranes / Forklifts. The in-process items will be transported from one machine to the other asper the process requirement with the help of Bay cranes / Fork lifts. The fabricated parts after QA clearance will be tagged as per the order / partnumber and will be sent to the dispatch area for dispatch.
Utilities	• Electricity (Connected Load) – approx. 1 Mw • Water about 50 m3/ day
Manpower Requirement	10

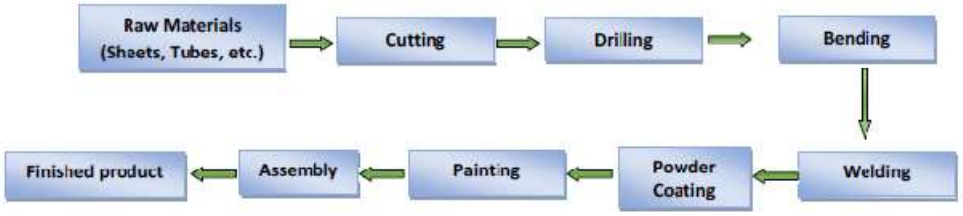
15. Wire Drawing Plant

Name of Project	Wire Drawing Plant
Area Requirement	8,000 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 120 Lakhs b) Plant and Equipment : ~ INR 870 - 880Lakhs
Project Scale	96,000 t per year
Process	
Utilities	• Electricity (Connected Load) – approx. 1 Mw • Water about 4 m3/ day
Manpower Requirement	18

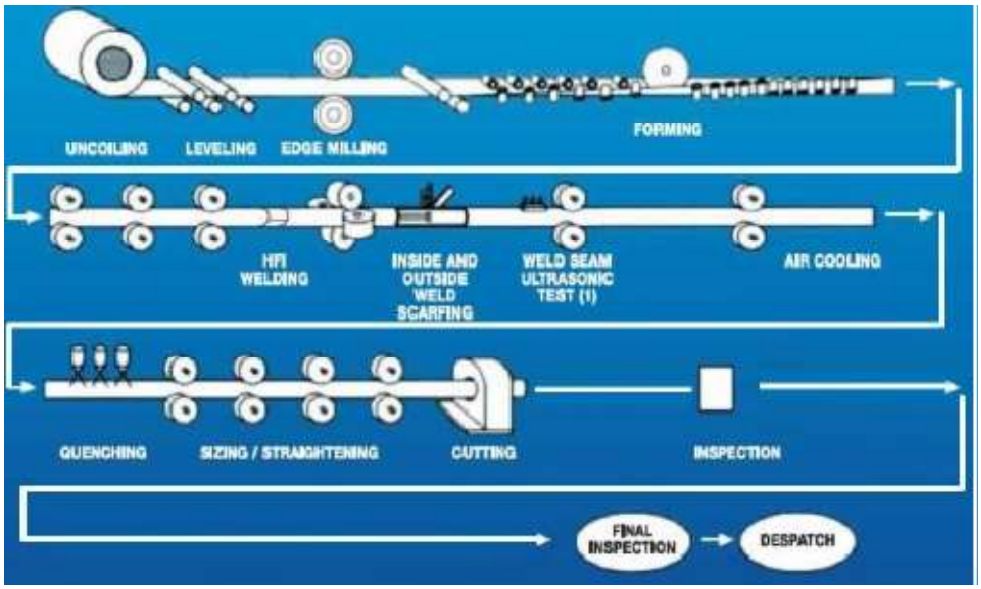
16. Manufacturing of Lancing Pipe

Name of Project	Manufacturing of Lancing Pipe
Area Requirement	900 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 40 – 50 Lakhs b) Plant and Equipment : ~ INR 45 - 50 Lakhs
Project Scale	2400 t per day
Process	The process involves the following operations: 1. Cutting the sheets to size. 2. Rolling the sheets to tubes in the Tube mill. 3. Welding the edges in induction welding machinery. 4. Cooling of Lancing pipes 4. Inspection and packing. The unit shall follow the IS specification & any of the following manufacturingprocesses. a. Continuous oxy-acetylene gas welded pipes (OAW). b. Electric resistance welded (ERW). c. High frequency induction welded (HFIW). d. Hot finished welded (HFW). 
Utilities	• Electricity (Connected Load) – approx. 20 kw • Water about 2 m3/ day
Manpower Requirement	17

17. Manufacturing of Steel Furniture

Name of Project	Manufacturing of Steel Furniture
Area Requirement	2000 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 35 – 40 Lakhs b) Plant and Equipment : ~ INR 25 – 30 Lakhs
Project Scale	1. Steel Almirahs 76” x 38” x 19” 800 Nos. Per Annum 2. Steel Almirahs 48” x 36” x 18” 150 Nos. Per Annum 3. Steel Cub Boards of assorted sizes. 900 Nos. Per Annum 4. Steel chairs: Folding type 1,500 Nos. Per Annum S-type 1,500 Nos. Per Annum
Process	The manufacturing process of steel furniture’s involves mainly cutting of sheets,tubes, flats to desired size, folding, bending, drilling, punching, riveting andassembling as per the design. Finally, these items are to be powder coated andcured in the oven the spray Painting is done as per the requirement. 
Utilities	• Electricity (Connected Load) – approx. 20 kw • Water about 1.5 m3/ day
Manpower Requirement	11

18. Manufacturing of Steel Pipes

Name of Project	Manufacturing of Steel Pipes
Area Requirement	500 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 40-50 Lakhs b) Plant and Equipment : ~ INR 490 - 500 Lakhs
Project Scale	6,600 tonnes per annum
Process	The manufacture of steel tubes involves the continuous forming of steel sheet stripinto an open seam tube, welding of the open seam edges with high frequencyresistance heating and continuous pressure jointing into welded tube, followed byreduction in tube diameter and then cutting into the desired length. Alternatively, as the production process or technology is more labor intensive sameworkshop can be developed in to a multipurpose work shop. 
Utilities	• Electricity (Connected Load) – approx. 450 kw • Water about 5 m3/ day
Manpower Requirement	20

19. Motor Rewinding Shop

Name of Project	Motor Rewinding Shop
Area Requirement	200 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 30 – 35 Lakhs b) Plant and Equipment : ~ INR 30 - 40 Lakhs
Project Scale	10 Nos per day
Process	An electrical motor consists mainly of stator and rotor. Depending on the type ofmotor, these differ slightly in nature. Winding refers to a system of insulatedconductors forming the current carrying element of a machine, designed toproduce a magnetic field, which influences a rotary movement. An electric machine operates 'because of the magnetic flux setup in its magneticcircuit by magneto- motive forces arising from currents flowing in groups ofwinding suitably disposed on the stator and rotor. Based on the construction & type of motor winding are arranged in slotsprovided in laminated iron core. Motor may be of single phase and three phase.Mostly in 3 phase motors, the number of coils equal to the slots. The coils areconnected such a way that three separate windings are formed which are calledphase winding. Each coil in these winding should be same size and shape, coil perphase are 1/3 of the total coils. The windings are connected in star or delta.
Utilities	• Electricity (Connected Load) – approx. 5 kw • Water about 2 m3/ day
Manpower Requirement	5

20. Manufacturing Unit for Galvanising facilities for Structural Pipes

Name of Project	Manufacturing unit for Galvanising facilities for structural pipes
Area Requirement	5,500 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 125 – 150 Lakhs b) Plant and Equipment : ~ INR 625 – 650 lakhs
Project Scale	4,000 tonnes per month
Process	The pipes/structural and its components are dipped into a degreasing tank toremove any oil/dirt etc., then these are dipped in acid (HCL) pickling tank forremoval of oxides followed by rinsing. Thereafter, these are dipped into fluxingtank. Then the material is dried before dipping in to zinc pot (450-460 degreecentigrade) for coating. The coated pipes/ structurals are passed throughDichromate tank for passivation purpose to avoid rust formation as per therequirement.
Utilities	• Electricity (Connected Load) – approx. 350 kw • Water about 5 m3/ day
Manpower Requirement	26

21. Pipe Coating Plant

Name of Project	Pipe Coating Plant
Area Requirement	4,000 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 2 – 5 lakhs b) Plant and Equipment : ~ INR 48 - 55 Lakhs
Project Scale	60,000 tonnes per month
Process	Steel pipes are coated with anti-corrosive coating materials to protect the pipeagainst corrosion. The coating materials should possess properties like resistanceto different types of soil, different types of water, mineral oil, and low permeability,high electrical contact resistance, mechanical resistance against impact, etc.Besides, the coating materials should also have surface smoothness and absence ofporosity, wide temperature range for application, resistance to ageing, etc. Synthetic materials such as polyethylene and epoxy possess the above propertiesand, therefore, are used as coating materials on outside and inside coating of pipesrespectively. The inside coating of pipes with epoxy resin also fulfils otherrequirements like defect free internal coating in respect of arching, flaking, peeling,etc., uniformity of the layer thickness, high surface smoothness, good adhesion andhigh degree of hardness. The most common process for outside coating of pipes with polyethylene is theextrusion process. In this process, polyethylene granulate is plasticized in theextruder and then applied in the form of a jet to clean surface of the pipe heated to1800 C to 2000 C. In the wrapping process, the pipes are first coated with thinlayer of epoxy resin as primer followed by adhesive thin sheet and then wrappingby polyethylene sheet for proper bonding / adhesion. The coating of the inside surface of the pipe is carried out by inserting an arm withspraying head inside the pipe. The compressed air is blown during forwardmovement of the arm to remove any dusts inside the pipe. During returnmovement of the arm, epoxy material is sprayed from two die heads for providingdouble layer of coating.
Utilities	• Electricity (Connected Load) – approx. 4.1 MVA • Water about 6 m3/ day
Manpower Requirement	26

22. Fabrication Shop

Name of Project	Fabrication Shop
Area Requirement	3,000 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 100 – 125 Lakhs b) Plant and Equipment: ~ INR. 200 -250 Lakhs
Project Scale	
Process	Following operations will be carried out in the fabrication shop: 1. Sheet metal, pipe and rod are cut to the required size. 2. Sheets are formed to required shapes in the forming machine. 3. Rods and pipes are welded with formed sheet metal. 4. Finally Painting is done. 
Utilities	• Electricity (Connected Load) – approx. 100 kw • Water about 10,000 lit/ day
Manpower Requirement	36

23. Forging Shop

Name of Project	Forging Shop
Area Requirement	500 sq m
Approx. Project Cost	a) Land and Buildings : ~ INR 30 – 35 Lakhs b) Plant and Equipment : ~ INR 120 – 140 Lakhs
Project Scale	
Process	The work metal is heated in the induction furnace up to 50 degree above eutectictemperature. It is kept over the die and a compressive force is applied to get thedesired shape. After forging, the product is heat treated to get the mechanicalproperties as required. Finally, the product is machined at various machines forfinishing.
Utilities	• Electricity (Connected Load) – approx. 750 kw • Water about 10,000 lit/ day
Manpower Requirement	36

24. Foundry Shop

Name of Project	Foundry Shop
Area Requirement	4,000 sq m
Approx. Project Cost	Land and Buildings : ~ INR 50 – 70 Lakhs b) Plant and Equipment : ~ INR 250 – 280 Lakhs
Project Scale	
Process	First of sand is mixed with water and keep in the mould box. The pattern is keptbetween cope and drag part of the mould box and the sqeezed by mould sqeezetype mould machine. After sqeezing of sand, cope and drag part of the mould boxis separated to take out the pattern and get the desired shape to be cast. Now, thecope and drag part of the mould is properly clamped and then molten metal ispoured in the mould cavity through sprue and then molten metal is allowed tosolidify. Before taking out the cast product from the mould box, one shouldensure that the molten metal has been solidified properly. After taking out the solidified metal it is allowed to cool to room temperature.Before heat treatment to get the desired mechanical properties, it needs fettling.After heat treatment, the cast product is finally machined to get the finishedproduct.
Utilities	• Electricity (Connected Load) – approx. 750 kw • Water about 10000 lit/ day
Manpower Requirement	36

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