# PERUMBAVOOR PLYWOOD MANUFACTURERS CONSORTIUM PVT. LTD.

P O N J A S S E R Y  P O S T
P E R U M B A V O O R
E R N A K U L A M  D I S T R I C T
K E R A L A

## PROPOSAL FOR SETTING UP OF A COMMON FACILITY CENTRE UNDER SMALL INDUSTRIES CLUSTER DEVELOPMENT PROGRAMME SCHEME OF OFFICE OF DC (SSI)

# CONTENTS

# LIST OF ANNEXURES

# ABSTRACT OF PROJECT

1. Project : **Proposal for setting up of a common facility centre** under small industries cluster development programme scheme of office of DC (SSI)
2. Name of the Project : Centralised urea formaldehyde resin making and high density plywood pressing under Cluster Development Project.
3. Implementing Agency : **Goverment of Kerala through industrial department.**
4. Location of CFC : Ponjassery Post, Perumbavoor, Ernakulam Dist.
5. Address of the unit

CFC : M/s. PERUMBAVOOR PLYWOOD MANUFACTURERS CONSORTIUM Pvt.Ltd.
Ponjassery Post,
Perumbavoor,
Ernakulam District.

a) Taluk : Kunnathunadu

b) Village : Vengola

c) Panchayat : Vengola

6. Capacity Utilisation :
   1st Year - 60%
   2nd Year - 75%
   3rd Year - 85%
7. Man power requirements/ Employment Potential :

A. Administration :

| | | |
|---|---|---|
| General Manager | - | 1 |
| Accountant | - | 1 |
| Office Staff | - | 2 |
| | | 4Nos. |

B. Production :

| | | |
|---|---|---|
| Chemist | - | 1 |
| Supervisor | - | 1 |
| Machine Operators | - | 6 |
| Skilled Workers | - | 6 |
| Unskilled Workers | - | 6 |
| Women Mazdoor | - | 5 |
| Mechanic cum Electrician | - | 2 |

27Nos.

8. Cost of Project:

| | | (Rs. In Lakhs) |
|---|---|---|
| Land | : | 16.88 |
| Technical Civil Work | : | 49.20 |
| Plant and Machinery | : | 220.28 |
| Supporting Equipments | : | 35.65 |
| Contingency | : | 7.68 |
| Preliminary and Pre-operative expenses | : | 4.33 |
| Operating Capital | : | 2.15 |
| Total Project Cost | | **336.16** |

9. Means of Finance : (Rs. In Lakhs)

| | | |
|---|---|---|
| Contribution from consortium | : | 33.62 |
| Grant from DCSSI under small industries cluster development programme for setting common facility centre | : | 235.31 |
| Grant from State Government | : | 67.23 |
| Total | : | **336.16** |

10. Break Even Point :

a) Operating B. E. P. :

| | | |
|---|---|---|
| (i) Percentage of installed capacity | : | 41.84% |
| (ii) In terms of sale | : | 57.98 Lakhs |

(b) Cash B. E. P. :

| | | |
|---|---|---|
| (i) Percentage of installed capacity | : | 12.22% |
| (ii) In terms of sales | : | 16.94 Lakhs |

15. Internal rate of return : 5 %(After Tax)
10 % (Before Tax)

16. Facilities Required :
Grant from DCSSI under small industries cluster development programme for setting common facility centre : **235.31Lakhs**

## EXECUTIVE SUMMARY

**a. Industrial Department of Kerala State Government** has identified the plywood cluster at Ernakulam under cluster development programme and approved as **SIDO cluster**. There are 85 plywood manufacturing industrial units functioning in Ernakulam district under SSI sector. In this Cluster Development Programme presently 24 small scale plywood manufacturing units in Ernakulam District have formed a consortium under the name and style of **M/S. PERUMBAVOOR PLYWOOD MANUFACTURERS CONSORTIUM PVT. LTD.** The remaining plywood industrial units will become members of this consortium immediately. The **Diagnostic Study** conducted on this Cluster found some major issues and recommend certain solutions. The immediate requirements of this cluster is **a common facility centre for face veneer peeling, Urea formaldehyde resin for veneer bonding, high density plywood making press etc.** which will benefit the units by way of improving the quality of the products, product differentiation, production cost reduction etc. Thus this CFC will improve the performance of this plywood cluster in total.

**b.** The consortium implemented common facility centre for **face veneer peeling (Phase I )** with their own sources. The total investment required for this project was Rs.91.34 Lakhs. Now the consortium is proposed to set up **a common facility centre for Urea formaldehyde resin for veneer bonding, high density plywood making press etc.**whose project cost is estimated to be Rs. 336.16 lakhs of which 70% of project cost Rs. 235.31 lakhs can be obtained as grant from Government of India under **'Small Industries Cluster Development Programme'** scheme. . An amount of Rs. 67.23 (20%) lakhs can be obtained as grant from State Governement.The balance amount of Rs. 33.62lakhs (10%) will be shared by the beneficiaries and stake holders (Consortium). The operating capital for this CFC will be Rs. 2.15 lakhs which is included in the project. The projected performance of this common facility centre for the first eight years of operation is appended. The unit will generate surplus from the first year of operation. Even though the project is not a

commercial project, it is technically feasible and overall economics of the project is satisfactory.

**c.** The active support for the project from the **industrial department of Kerala** in the form of implementing agency will benefit the plywood industries at Ernakulam District and especially those in consortium.

**d.** This common facility centre will be owned by the Kerala State Governement.

**e.** The consortium will execute necessary agreements and undertakings with the implementing agency - Industrial Department of Kerala.

**f.** The day to day operating expense of the common facility centre in terms of electricity charges, labour charges etc. will be borne by the consortium and the required periodic maintenance, modernisation etc. will be met by the **corpus fund** raised from the surplus derieved from the earnings from user's levy of the common facility centre. The existing loans can also be repayed by the surplus generated.

**g.** The consortium will appoint necessary technical experts and skilled labours for running the common facility centre.

**h.** This cluster will provide direct employment to 7000 persons and indirect employment to 3500 persons. The aggregate turn over of this cluster is Rs. 305 Crores.About 15% of their products are exported to middle east countries.

**i. Implimentation Period**

**Phase I** : Collection of all information, data, preparation of drawings and inviting quotations etc. A detailed schedule in terms of bar charts is prepared for implementing the project. This will be carried out within a period of six months.

**Phase II** : Actual implementation of the project.

This will take at least 18 months as the supply period of the machines will take 9 to 14 months. Besides it will take around 6 to 7 months for land development and building construction. The tentative date of trial production will be July 2007 and operation of CFC will be carried out within 30 days from the date of trial production.

# SECTION - I INTRODUCTION

## BACKGROUND

### Industry Status

There are 85 plywood manufacturing industrial units functioning in Ernakulam district under SSI sector. The capital investment of these industries vary from 45 to 98 lakhs. Total turn over per annum is about Rs. 305 Crores. Plywood industry in Ernakulam District is creating employment opportunities directly to 7000 persons and indirectly to 3500 persons. The power requirement per each unit is around 60 to 150 HP. About 15% of their products are exported to middle east countries.

Presently around 24 small scale plywood industries have formed a consortium under the name and style of **'Perumbavoor Plywood Manufacturers Consortium Pvt. Ltd.'** The remaining units will become the members of this consortium immediately.

### Major Issues and Immediate Solution

The main raw material required for plywood manufacturing are core veneer, face veneer, urea formaldehide resin (Bonding gum) etc. The core veneer are required for manufacturing interior core of plywoods. The both sides of the core veneers are pasted with face veneers. Presently most of the plywood manufacturing units in this cluster have inhouse facility to manufacture rubber wood based core venner. But there is no facility to manufacture face veneer in this cluster. The units have to purchase face venner required for their plywood production from other states such as Chennai and Mangalore. So they have to incure heavy transporation cost and quality of face venner is not assured. The total annual requirement of face veneer is 714 lakhs sq. mtrs.valued at Rs. 85.68 Crores. So a common facility centre for peeling face veneer is essential for this cluster, so that transportation over head and middle level persons in the supply chain can be avoided. By starting this common facility centre the cluster can save around 16% cost in face veneer.

The other raw material required for plywood manufacturing is Urea formaldehyde resin for bonding core veneers and face veneers. The annual requirement of urea formaldehyde resin for this cluster is 38250 MT valued at Rs. 42.07 Crores. Presently there is no facility to manufacture bonding resin in this cluster. By starting this common facility centre the cluster can save around 38% cost in bonding resin. The consortium is planning to import methanol directly from foreign countries such as Saudi Arabia, Malaysia, Singapore, Iran, Iraq etc. and convert this methanol into formalin and then urea is added. The above cost saving is derived by the bulk import of methanol and minimising transporting overhead.

Presently there is no capacity to manufacture high density plywood in this cluster. The high density plywoods have specific application in special industries and Indian Railways. It is not practically possible to install 1500 MT capacity heavy duty hydraulic hot press by individual units. So a centralised facility for manufacturing high density plywoods is essential for this cluster. Since this is a specialised product, it has high value addition. The consortium

can supply the high density plywood directly to Indian Railways and other industries, so that high margin is assured.

In this context the consortium decided to establish a centralised common facility centre for face veneer peeling, urea formaldehyde resin making, high density plywood pressing to over come above problems.The consortium implemented common facility centre for face veneer peeling as phase I with their own sources.

**Benefits for members.**

The consortium members can utilise this common facility centre for making quality and value added plywoods and this will help to increase their market potential. This will also help to compete with manufacturers of other states such as Uttar Pradesh, Chatteesegarh, Gujrat, Assam etc.

The heavy duty plywood press installed in the common facility centre can be utilized by the members in order to cater bulk orders of heavy density plywoods. This common facility centre render the services as follows

Urea formaldehyde making - on the basis of MT

High density plywood pressing - on the basis of number of sheets.

This common facility centre will ultimately help the plywood industries in Ernakulam District to increase it's productivity, improve quality, improve capacity utilisation, improve product diversification and marketing etc. In other words these small scale industries can produce bulk quality products at competitive rate.

**Modus of operandi**

The common facility centre provide urea formaldehyde resin manufacturing, high density plywood pressing services to members. It charge a nominal amount for meeting operational expenses and making corpus fund for future modernisation, up gradation and sustenance of the plant. If there is any additional spare time available in the centre can be offered to other plywood clusters at Kottayam and Kannur. Thus maximum capacity utilisation can be achieved.

The raw materials required for ureaformaldehyde resin manufacturing are methanol and urea. The units will import methanol in bulk from Saudi Arabia or other foreign countries and purchase urea in bulk from FACT. In this proposed common facility centre methanol is converted into formalin and mixed with urea for making urea formaldehyde. The consortium will charge an amount of Rs. 1200 per MT of resin manufacturing from individual units. The proposed high density plywood pressing centre the individual units bring core veneer and face veneer and pressed into high density plywood by using 1500 tonnes capacity hot press. The consortium will charge an amount of Rs. 60.00 per Sheet of High Dencity Plywood pressing from individual units.

# SECTION - II TECHNICAL ASPECTS

**FORMALIN :** The process of manufacturing Formalin consist of mixing Methanol, water and air and then reacting over silver granule catalyst bed in a particular method. The reaction starts when the temperature reaches at $75^{O}$ C and then the temperature is gradually increased to 600 to $700^{O}$ C. The exit gas from reactor outlet containing formaldehyde and un-reacted methanol are lead to absorption tower where formaldehyde and methanol are dissolved in water forming a solution of Formaldehyde which is known as Formalin. The formalin is taken to final storage tank.

**UREA FORMALDEHYDE SYNTHETIC RESIN :** Formalin is mixed with Urea in the reaction vessel and heated in presence of catalysts. Excess water in the vessel is distilled over by external heating as a result of which the final product of 50% solids is obtained.

The resin formation is the result of two different chemical reactions. Addition of formaldehyde in formalin with urea to form a simple compound product and the linking together of these compound product to form a polymer which results the formation of synthetic resin. These reactions are carried out under the catalytic influence of a number of chemicals, suitably added to the reaction mixture. The main catalysts are Citric acid and Caustic soda.

**HIGH DENSITY PLYWOOD PRESSING :** The core veneer of the required thicknesses are first glued by urea formaldehyde resins with the help of the glue spreader. Over the core veneers, on either side a face veneer is also glued on. A margin of about half an inch on all sides is allowed for sawing off after pressing to obtain smooth edges. This is considered normal waste and has been provided for.

This glued and wet plywood, now between the aluminium sheets is then transferred to the hydraulic hot press with the help of the scissor lift and placed inside the daylights (that is between the platens). The pressure in the press is then raised to 1500 tonnes by the oil operated hydraulic press and the temperature maintained around $110^{O}$ C by the boiler. After this treatment - 10 minutes for 4 mm, 15 minutes for 6 mm plywood, 20 minutes for 8 mm, 30 minutes for 12 mm, 45 minutes for 18mm plywood - the temperature and pressure are reduced to normal and the platens lowered and the plywood sheets with the aluminium sheets taken out of the press. These are then allowed to cool, sanded to make the surface smooth, the serrated edges, if any, cut out and all sheets are cut to the required size, the standard size being 8' x 4'. Sealed and stamped for quality checking.

# SECTION - III LAND AND BUILDING

## LAND :

The phase II of the common facility centre **for Urea formaldehyde resin for veneer bonding, high density plywood making press etc.** is proposed to set up in 300 Cents of land in survey number 101/5-2,10-1,10-2,11in Vengola Village, Kunnathunadu Taluk, Ernakulam District. The cost of Land for common facility centre is Rs. 16.88 Lakhs including land developments.

## TECHNICAL CIVIL WORK :

The following are the plinth area of the building required for common facility centre

| | Rs. in lakhs |
|---|---|
| Factory Building for Urea formaldehyde resin Making facility (998.50 $M^2$) | 26.00 |
| Factory Building for high density plywood pressing facility (930 $M^2$) | 23.20 |
| **Total** | **49.20** |

# SECTION - IV PLANT AND MACHINERY

A plant is a place where men, material, money, equipment, machineries etc. are brought together for manufacturing products. Today in modern industry equipment and machineries are very important part of the total production effort than the case years ago.

The following machineries are required.

**A CFC FOR GLUE PLANT**

1 100000 L underground M.S. Storage Tank and accessories 1 No.
2 20000 L underground M.S. Storage Tank and accessories 1 No.
3 1000 L/hr capacity wood fired smoke tube Boiler and accessories 1 No.
4 5 H.P. capacity Gem Model Cooling Tower and accessories 1 No.
5 50000 L M.S. Storage overhead Tank and accessories 1 No.
6 1500 L capacity stainless steel water mixing tank and accessories
7 1500 L capacity stainless steel vaporiser and accessories 1 No.
8 1200 Cu. Mtr/Hr capacity air compressor and accessories 1 No.
9 6' x 10" O stainless steel shell and accessories 1 No.
10 10" O stainless steel liquid methanol separator and accessories 1 No.
11 20 MT/day capacity stainless steel reactor and accessories 1 No.
12 10' x 1.5' O x 6mm thick M.S. Steam separator and accessories 1 No.
13 10' x 12" O stainless steel shell and gas cooler and accessories 1 No.
14 10' x 12" O stainless steel shell and economiser and accessories 1 No.
15 30' x 80 cm x 4 mm thick absorption tower and accessories 3 Nos.
16 1" round x 1" long rings 14 cu.m @ 15,000 1 No.
17 Alfa-Laval one side stainless steel water cooler 1 No.
18 Liquid flow Roto-metres 12 Nos.
19 6' x 6" O stainless steel shell and tube condensor 1 No.
20 1500 L capacity stainless steel tank for reactor cooling and accessories
21 1500 L capacity stainless steel tank for collection and accessories
22 1000 L capacity stainless steel tank steam condensor 1 No.
23 20000 L capacity extra thick Sintex tanks 3 Nos.
24 10000 L capacity cooling water storage tank 2 Nos.
25 5000 L capacity DM water tank 3 Nos.
26 15000 L per day capacity DM water plant and accessories 1 No.
27 F.K.Y. 50 model chilling plant and accessories 1 No.
28 Stainless steel & gun metal valves and steam trap and accessories
29 3/4" O to 6" O x 2 mm thick stain less steel pipes and accessories
30 3/4" O to O.M.S.C class and B class pipes
31 Temperature indicators, pressure guages and control panels
32 12-15 Mesh size 99% pure silver granules 100 Kg
33 5 MT capacity manually operated chain pulley 1 No.
34 0.50 MT capacity manually operated chain pulley 1 No.
35 16 mm thick 8' x 4' stainless steel 304 quality plate 1.50 piece 600 Kg.
36 Erection expenses
37 25 MT per day capacity UFS resin kettle and accessories 1 No.
38 10' x 45 cm O shell tube condenser and accessories 1 No.
39 160 L capacity cylindrical type Azeotrop and accessories 1 No.
40 10' x 6" O x 2mm thick S.S. pipe and accessories 10 Nos.

41 20' x 2" O x 2 mm thick S.S. 304 pipe and accessories 10 Nos.
42 1/2" to 3" M.S. pipes C class
43 Stainless steel & gun metal valves and steam trap and accessories
44 GEM make FRP cooling tower and accessories 1 No.
45 40 MT holding capacity UFS Resin Kettle 1 No.
46 Various types of pumps and motors and accessories
47 1.50 MT capacity Electric hoist and accessories 1 No.
48 Foundation and other works

**B CFC FOR HIGH DENSITY PLYWOOD PRESSING**

1 Horizontal Multi Tubular Boiler evaporation capacity of 2 Ton/Hr.
2 Hydraulic Press (pressure 1500 Tonnes), 10 day light
3 1.6 mm Polished steel sheet 60 Nos.
4 2.5 mm Kaul Board Aluminium Sheet 60 Nos.
5 ACE pick and carry crane 12 Ton capacity
6 Belt Sander
7 Glue Spreader
8 Scissor Lift
9 Glue Mixer
10 Veneer Cutter

**Supporting Equipments**

The common facility centre is in need of diesel generator set, laboratory equipments, fire fighting equipment, industrial electrification, office equipments and computers. The total proposed investment required is shown in Annexure III.

# SECTION - V MAN POWER REQUIREMENTS

The consortium will arrange necessary technical experts and skilled operators for running this common facility centre. The continuity of professionals and skilled workers are ensured by the consortium.

According to organisational structure envisaged for the common facility centre, General Manager will be in charge of functions of the unit. He looks after the overall management of the common facility centre. There will be one chemist, one supervisors, 6 machine operators, 6 skilled workers, 6 unskilled workers 5 women mazdoor 2 mechanic cum electrician reporting to General Manager.

There will be 1 accountants in helping Managers in matters like accounting, book keeping, banking and other finance related affairs. There will be 2 more office staffs in charge of office matters.

In total there will be 31persons including Manager employed in the unit. The monthly salary and benefits will come to Rs. 1,84,862.50- shown in Annexure - VI.

# SECTION - VI OTHER PROJECT DETAILS

## A. UTILITIES :

### 1. Power :

Required power is available from Kerala State Electricity Board. The total connected load for common facility centre is 154 H.P or 144.375K.V. A. The annual electric charge is Rs. 13.95 lakhs at full capacity utilisation. Details are given in Annexure - V. The consortium will pay this amount from the service charge obtained from its members.

## B. MISCELLANEOUS EXPENSES :

These items includes repair and maintenance of building, plant and machineries, postage charges, cost of printing and stationary items, insurance charges. An amount of Rs.9.97 lakhs per annum has to be incurred towards the smooth operation of the C.F.C. The details of estimation are given in Annexure - VIII.

## C. PRELIMINARY AND PRE-OPERATIVE EXPENSES :

These items include company registration, project report preparation, building design and drawing, technical consultancy fee etc. Thus the preliminary and pre operative expense required for implementing the proposed project is Rs. 4.33 lakhs. The details of estimation are given in Annexure - IV.

# SECTION - VII PROJECT PARTICULARS

## PLANT CAPACITY AND CAPACITY UTILISATION

The common facility centre have an annual installed 7500 MT of urea formaldehyde resin making and 81,000 sheets of high density plywoods. Because of down time and other various reasons, the capacity may not be releasable and it is assumed that 60% of the capacity utilisation will be achieved during first year and 75% during second year and 85% capacity utilisation will be achieved, third year onwards.

| Particulars | Qty | Service Charge Rs. Ps. |
|---|---|---|
| Earning from users levy on urea formaldehyde resin making | 7500 M.T | 1200.00 |
| Earning from users levy on high density plywood pressing | 81000 Sheets | 60.00 |

The details are shown in Annexure IX.

Presently this cluster is in need of 38250 M.T urea formaldehyde valued at Rs. 42.07 crores.

# SECTION - VIII FINANCIAL ASPECTS

The estimated capital outlay of the project is Rs. 336.16 lakhs as shown in Annexure - XI. The capital expenditure is proposed to be raised as the contribution of consortium to the extent of Rs. 33.62 lakhs (10%) and the Grant from DCSSI under small industries cluster development programme for setting common facility centre is expected to Rs. 235.31 lakhs (70%). There is an amount of Rs. 67.23 (20%) lakhs can be obtained as grant from State Governement.

## I. Viability of the Project :

### Assumption to Revenue Estimates :

The projected revenue estimate of the unit is shown in Annexure XIV and are based upon the following assumptions.

1. The CFC will have an installed capacity of 25 M.T of urea formaldehyde resin manufacturing, and 270 sheets of high density plywood pressing per day and the unit will work for 300 days in year.
2. The installed capacity of the CFC is 7500 M.T of urea formaldehyde resin manufacturing and 81000 sheets of high density plywood pressing per year.
3. The capacity utilisation is at 60% first year, 75% during second year, 85% third year onwards.
4. The main utilities are power and water. The total power requirement is 144.375 K.V.A. The power charge is calculated considering the tariff fixed by KSEB.
5. Repairs & Maintenance is provided @ 2% on building and 3% on Plant & Machinery.
6. Details of computation of depreciation is attached as Annexure-XII & XIII. Straight line method of depreciation is applied for project purpose. However, for income tax purpose, written down value method is applied for.
7. Administrative expenses is provided in the net revenue estimate. It includes rates & taxes travelling expenses, postage telephone & telegram, printing & stationery, other office expenses etc.
8. Income tax is provided considering the rates applicable to private limited company. Computation of income tax is attached as Annexure - XVI.
9. A corpus fund is raised from the surplus derieved from the operation of the common facility centre.

Net Revenue estimates are furnished in Annexure - XIV According to this statement there is a cash surplus of Rs. 17.89 lakhs in the first year of operation. The projected cash flow statement is appended as Annexure - XVI. As per cash flow statement there is cash surplus adequate to meet all the day to day expenses and making corpus fund for periodic maintenance and upgradation of CFC.

The internal rate of return of the project is 5% after tax which is computed inAnnexure - XVIII.

Break even level of operation is computed in Annexure -XIX. Operating BEP works out to 41.84% of the installed capacity and the cash BEP works out to 16.94% of installed capacity.

# SECTION - IX

# CONCLUSION AND RECOMMENDATION

M/s. PERUMBAVOOR PLYWOOD MANUFACTURERS CONSORTIUM PVT. LTD, Ponjassery Post, Perumbavoor, Ernakulam District, is planning to set up a common facility centre for urea formaldehyde resin making and, high density plywood pressing in second phase under **Small Industries Cluster Development Programme** scheme. The consortium implemented common facility centre for **face veneer peeling (Phase I )** with their own sources. Presently about 24 plywood units in Ernakulam District have joined together and formed a consortium. The remaining industries will join immediately. The proposed annual capacity of the CFC is 7500 M.T of urea formaldehyde resin manufacturing and 81000 sheets of high density plywood pressing per year. The required technical knowhow for production is indigenously available.

The implementation agency for the proposed common facility centre is Government of Kerala (Industrial Department).

This common facility centre will not create any atmospheric pollution.

The estimated capital outlay of the project is Rs. 336.16 lakhs and as is proposed to be financed as follows :

| | (Rs. in Lakhs) |
|---|---|
| Contribution from consortium members (10%) | 33.62 |
| Grant from Government of India (70%) | 235.31 |
| Grant from State Government (20%). | 67.23 |
| | **336.16** |

The projected net revenue estimate of the CFC for first 8 years are satisfactory. The project is technically feasible and provide a key role in the total development of plywood cluster in Ernakulam.

K. SAJIL KUMAR, M.Tech A.M.I.E., C.E.
CHARTERED ENGINEER & CONSULTANT
A2, ASHOK APARTMENT, NEAR CIVIL SATATION
KAKKANAD, ERNAKULAM, KERALA – 682 030
Phone: +91 9388607508
Email: kerconsultancy@yahoo.com