# POWDER COATING PLANT WITH HSD FIRED OVEN, POWDER COATING BOOTH WITH QTY-05 SETS MOTORISED OVERHEAD CONVEYOR SYSTEM FOR TRICYCLE AND WHEEL CHAIR FRAMES (ON TURN KEY BASIS)

# 1. BRIEF SCOPE OF SUPPLY

Our brief scope of supply would include the designing, manufacturing, supply and commissioning of the Powder Coating Plant having following items:

SI.	Item	Qty.
1.	Powder Coating Gun	02 Nos.
2.	Powder Coating BoothFilter cartridge type  Back to Back	01 No.
	• Back to Back	
3.	4 Wheel Motorized overhead Conveyor with its support structure.	01 Lot
4.	Camel back type powder curing oven.	01 Set.
5.	Control Panel	01 Lot
6.	Exhaust Ducting	01 Lot

# 2. BASIC OF DESIGN / TECHNICAL DATA

1.	Component	Tricycle/wheel chair frames & components
2.	Size of The Component	1500 x 1000 x 900 in mm (L x W x H)REF DRAWING
3.	Weight of component	50 kg approx.
4.	Material Handling	Overhead Conveyor
5.	No of Shift	1
6.	Fuel	HSD Fired
7.	Working Hour	8 Hr. (400Min)PER SHIFT
8.	Area required/available	As per your layout
9.	Electrical data	450v, 50 Hz. 3 Phase (4 Wire System) 240 V, 50 Hz, 1 Phase.

# 3. POWDER SPRAYING UNIT

The Spray System shall be based on the state-of-the-art 100 KV Integrated Spray Gun technology withMultiple safety measures and trouble free operators working and hassle free operations.

One unit Consists of : Powder Spray Gun, Powder Hopper with feed pump Electro

Pneumatic Control Panel and trolley etc.

No. of units required : Two Nos.

**SPRAY GUN** 

Type : In-built type HV generator Cascade in Barrel

Input Voltage : 24 V AC

Output Voltage : 100 KV Negative (Max.)
Weight : 500Gms. (approx)

Deflector : 9mm, 14mm and 20 mm

Generator : Solid state electronic circuit Generates 16 KHZfor

operation

The system shall be designed on feed-back circuit which automatically sense gun to object distance and constantly controls Powder charging efficiency to the desired levels.

ELECTRO PNEUMATIC CONTROL PANEL

Input Voltage : 180 to 250 V AC

Output Voltage : 24 V AC
Air Pressure : 5 Kg/Cm2
Solenoid Valve Voltage : 24 V DC

POWDER HOPPER WITH FEED PUMP

Shape : Cylindrical Material of Construction : Stainless Steel

Capacity : 10 Kg.(approx.) Of Powder Powder Flow Rate : 0 - 30 Kgs./Hr. (Controllable)

CVT(Control voltage transformer) : 500VA with each set of control system

# 4. POWDER COATING BOOTH (Filter cartridge type)

## **Construction Details:**

The Booth shall be of modular type made of mild steel with proper strengthening. Booth shall have spray enclosure with contoured design, toensures uniform air-flow without any dead pocket or Air

whirls over the entire cross section of the booth and very low level of powder accumulation. The Booth shall be provided with Filter Cartridgerecovery system. The Filter Cartridge recovery consists of a Filter Separator connected to the booth for efficient separation of the Powder.

# **TECHNICAL DETAILS**:

SL.	ITEMS	SPECIFICATION	
1.	Туре	ВАСК ТО ВАСК	
2.	Maximum Size of component	1500 x 1000 x 900 in mm (L x W x H)	
3.	Max Weight of component	50 kg approx.	
4.	Type of Application	Conveyorized	
5.	Unit	01 No.	
6.	Internal Dimensions Approx	4000 mm X 1500mm x1750mm (L x W x H)	
7.	Overall Dimensions	4500 mm x 2750mm x2750mm (L x W x H)	
8.	Operator cutout	800 x 1200 mm (W X H) on both side back to back,	
9.	Side Opening	1000 x 1250(W X H) Both side	
10.	Blower	02 no. x 6000 CMH (01 no. each side)	
11.	motor	02 nos. x 5 HP (01 no. each side) ABB/CG/Siemens /Bharat Bijli/kirloskar/Alstom	
12.	Filter cartridge	06 Nos, Size- (300 x1000). (03 Nos. each side) Make-Advanced/Amrit filtration	
13.	MOC (Material of construction)	Booth shall be made of 1.6 mm thick CRC with suitable structure in MS.	
14.	CRC Sheet	SAIL/TATA/Jindal /Poscomake	
15.	Illumination	04 set of (2 x 40 watt) fitted on top of booth	
16.	Painting Scheme	One Coat of Red Oxide followed by inside white color synthetic enamel paint and outside blue color enamel paint.	
17.	Coating Process	Job shall be coated manually from both sides.	
18.	Material Handling System	Online Conveyorized	
19.	Solenoid Valve	6 Nos. make- Avcon/Fesco/Norgan	

## 5. CAMEL BACK TYPE POWDER CURING OVEN

#### **Description:**

The oven shall be made of an insulated sheet metal enclosure in which hot air is circulated through a heat exchanger. Blower to be provided to circulate the hot air And Hot air is distributed inside the oven through ducting.

## **Construction features:**

Insulated panels shall be made of GI sheet metal formed into panels of cassette construction. One panel is bolted to the other panel with the asbestos tape sandwiched between the two. Proper reinforcement shall be provided to make panels rigid. The outside of the oven shall be with corrugated, Pre-coated sheets to give better aesthetic looks.

#### **Hot Air Recirculation:**

Hot Air blower shall force air overheat exchanger and then heated air to enter the oven and it returns back to the suction of the fan. The fan shall be coated with heat resistant silver colour paint and shall be statically and dynamically balanced.

## **Indirect HSD Fired Heating System:**

The heat Exchanger shall consist of SS 304 combustion chamber with proper arrangement of suction and discharge connection of hot air circulation blower. The heat exchanger box to be duly insulated to reduce heat losses.

A burner shall be mounted on the combustion chamber with necessary controls and interlocks.

#### **Maintenance Features:**

Doors are to be provided for maintenance of the heat exchanger during de soothing operation.

## **Safety Features:**

The circulating blower shall be inter-locked with the burner such that the blower is always 'ON' before the burner is 'ON'

The temperature sensors shall be so placed to provide the actual working temperature of the oven.

# **TECHNICAL DETAIL**

Heating source : Through Indirect HSD Fired System

Design Air Temperature : 200°C +/- 10 Deg C

Temperature controller : Digital single set point ON/OFF control with PT-100 sensor

SIZE (Internal) : 9175 – (3800-2750) – 2500 mm (L, W, H)

(Overall) : 9575 – (4200-3150) – 2900 + 2500 mm for camel back effect

Curing time :  $200^{\circ}$  C +/- 10 for 10  $^{\sim}$  12 min. EMT

Residence time : 20 min. inside the oven

Sr.	ITEM	SPECIFICATIONS
1	Material of Construction –Panel of nut bolt	GI
	construction	
	Panel material thickness	1.2 mm
	Panel Rockwool density	60 kgs/m <sup>3</sup>
	Insulation thickness	200mm
	External cladding material of construction	Pre-coated, Corrugated sheet
	External cladding material thickness	0.5 mm
2	Hot Air circulation fan type	Centrifugal, MS casing
	Drive	V-belt driven
	Mounting	Foot mounted
	Capacity m <sup>3</sup> /hr	1 nos. X 15,000 CMH
	Head mm Water Gauge (w.g.)	70 mm
	Drive motor	1 nos. x 7.5 hp (Motor Make – ABB / Siemens
		/ Crompton/Bharat Bijli/Kirloskar/Alstom)
	Motor specs.	4 pole, foot mounted, TEFC, 3 phase, AC
3	Heating system	To be Provided by vendor
	Material of construction	To be Provided by vendor
	Heat exchanger specifications	Material :
		SS 304, having shell of thickness 3 mm
	Heat Load(approx)	1,30,000 Kcal/hr
	Burner capacity kcal/Hr.(approx)	1,70,000 Kcal/hr (MAKE- Ecoflame)
	Burner modulation	Single stage

4	Safety Interlock for Blower and Burner	To be Provided by vendor
5	Entry & exit	
6	Туре	From the bottom of the oven, vendor to provide camel back effect. Hoods for exhaust
		the hot gases shall be provided. There shall be
		no circulation of air in this zone.
7	Opening	It shallbe camel back type
8	Flue gas exhaust	Suitable exhaust system shall be provided.
		The exhaust system would consist of flue gas
		ducting duly insulated up to 2000 mm height
		from the ground and proper 'T' connection
		would be given for inspection.
9	Painting	Synthetic enamel spray
9.1	Heat exchanger cabin	HR paint
9.2	Oven support	Synthetic enamel spray

# 6. OVERHEAD MOTORIZED CONVEYOR

4 WheelOverhead Motorized conveyor shalltravel along with the rails that run four directions: up, down, left and right. With the advantage of efficient use of limited space can convey through the place that cannot be reached by workers, thus making the use of most factory space

# **Technical details of motorized conveyor:**

1.	Туре	4 wheel-Overhead Motorised Conveyor.
2.	Total length	65 Mtr. (Approx)
3.	Drive unit	01 No.Caterpillar type drive unit fitted with 1.5 hp suitable gear box with motor
4.	Overload safety	Shear pin arrangement.
5.	Maximum Size of component	1500 x 1000 x 900 in mm (L x W x H)
6.	Component weight with hanger / point	50kg approx.

7.	Take up (tension unit)	Weighted type
8.	Link pitch	8"
9.	Hanging pitch	32" & its multiple.
10.	Speed	Designed speed is 0.5 m/min, however a frequency drive will be
		provided for varying the conveyor speed.
11.	Supports	Conveyor shall be supported from ground / Floor / wall as per
		site conditions.
12.	Auto Lubrication System	1 no. Shall be provided for self-Lubrication of the plant.
13.	Supports	Conveyor will be supported from ground /floor / wall as per site
		conditions.
14.	Bend Radius(approx)	Horizontal 900 mm, Vertical 800 mm.
	or	
	should be designed such	
	that the painted	
	component do not	
	foul/intermingle/collide	
15.	Lubricating unit	One no. centralized unit shall be provided.
16.	Under guarding	Under guarding shall be provided where the components are
		above the man height.
17.	Painting	Track is coated with two coats of anti-rust primer paint and
		chain is zinc plated.

# 7. CONTROL PANEL

• The control panels shall have controls for complete paint shop as indicated below:

1	Mains	Isolator
2	PC Booth Blower	On/Off
3	PC Oven Burner	On/Off
4	PC Oven Blowers	On/Off
5	Conveyor	On/Off
6	Emergency	STOP

• It shall have all incoming electrical indications and other indications as described below:

1	Main	Isolator
_	1	10 0 10 10 1

2	PC Booth Blower	On/Off
3	PC Oven Burner	On/Trip
4	PC Oven Blowers	On
5	Conveyor	On
6	Emergency	On

The control panel with separate switch on/off for mains and separately for other electrical connection following all safety feature/guidelines of government

All switch gear Electric contractor, MCCB, MPCB, MCB's, Overload, Relays shall be of Make: Siemens/Schneider/Telemechanique/Havells

Proximity switches Make: Balluf/Euchner/BCH

All Cable Make: Lapp/Polycab/havells/National/RRB

CVT-500VA

## Delivery period including installation & commissioning:

The delivery, installation & commissioning period of complete Powder Coating Plant at the destination mentioned in the tender documents will be 03 months for delivery and installation, commissioning & Prove-Out from the date of placement of Purchase Order/work contract.

Vendor shall provide TTR (Time Temperature Recorder) for working of temperature as specified.

#### **Operator training**: for 07days

#### Warranty/Defect Liability:

The entire Powder Coating Plant inclusive of all system/accessories must be covered under warranty for a period of 24 months (minimum) from the date of successful Installation &commissioning and Training to be provided.

## Note:

- 1. Powder Coating Plant shall be supplied with 3 sets of comprehensive operation and maintenance manual.
- 2. Jigs and hanger-50 sets for tricycles and wheelchair frames
- **3.** All civil work is in the scope of vendor
- **4.** Supply to be done on Turnkey Basis. ALIMCO shall provide electrical supply point, air supply and water supply near to the place of installation. Consumables like Powder paint and job for trial shall be provided by ALIMCO.
- **5.** Supplier is required to respond/attend within 48 hrs from the time when problem/defect on plant is reported to the party.

- **6.** Loading /unloading of the material at destination is in the scope of supplier.
- **7.** Area available at 50ftx30ftx15ft
- **8.** After installation TTR (Time Temperature Recorder) report to be provided for working of temperature as specified















