

SPECIFICATION**“Powder Coating Plant (On Turn Key Basis)”**

Code No. _____

Qty. – 01 Set

A	Scope of supply/work	
1.	Dip Pretreatment Plant with Water Drying Oven-Manual	
2.	Powder Coating Booth with Guns	
3.	Powder Curing Oven	
4.	Overhead Conveyor	
5.	Hoist	
6.	CNG/LPG/ PNG Piping	
7.	Electrical Panel & Cabling	
B	Specifications	
Sr.No.	Description of requirement	Required
1	Basics of Design	
1.1	Component size maximum(mm)	900L X 900W X 1500H
1.2	Component Cutout (mm)	1100L X 1100W X 1700H
1.3	Component (Material of Components)	Mild Steel/Stainless Steel/Aluminum
1.4	Weight of component	Max. 30 kg
1.5	Working Day in a month	26 Days
1.6	Working Day in a year	312 Days
1.7	Working hours	12 hrs/day
1.8	Productivity: No. of components/year	41000/Year
1.9	Productivity: No. of components/Day	132/Day
1.10	Productivity: No. of components/hr	11 Components/hr
1.10	Available Floor Area	(36L X 12W) Meter.
1.11	Powder baking schedule	EMT 10 min @ 180°C
2	Pre-treatment Process	
2.1	Process	
2.1.1	KOD/Degrease-1	MS (min. 4 mm thick) Size: (2350LX1300WX2450H)
2.1.2	KOD/Degrease-2	MS (min. 4 mm thick) Size: (2350LX1300WX2450H)
2.1.3	Water Rinse-1	MS (min. 4 mm thick) Size: (2350LX1300WX2150H)
2.1.4	Water Rinse-2	MS (min. 4 mm thick) Size: (2350LX1300WX2150H)
2.1.5	De-rusting	SS 316 (min. 2.5 mm thick) Size: (2350LX1300WX2150H)
2.1.6	Water Rinse-3	MS FRP (min. 4 mm thick) Size: (2350LX1300WX2150H)
2.1.7	Water Rinse-4	MS FRP (min. 4 mm thick) Size: (2350LX1300WX2150H)
2.1.8	DM Rinse 1	SS 304 (min. 2.5 mm thick) Size: (2350LX1300WX2150H)
2.1.9	NANO	SS 304 (min. 2.5 mm thick) Size: (2350LX1300WX2150H)
2.1.10	DM Rinse 2	SS 304 (min. 2.5 mm thick) Size: (2350LX1300WX2150H)
2.1.12	Water Blow Off Zone	3 H.P. 1440 RPM, 6000 m ³ /hr (min.)
2.1.13	The tanks should have water inlets, overflow connection and drain connections with valves and pipes along with pipes/ducts to blow air to all tanks of appropriate quality and length.	Confirm
3	Tank Heating System	
	For KOD & Degrease	

3.1	Fuel	PNG/LPG/CNG burner
3.2	Initial Heating Time	45 min (max.)
3.3	Temperature	For KOD & Degrease: 55°C
4	Accessories For Pretreatment	
4.1	Fume Extractor- 2 sets for KOD & Degrease	0.5 H.P. 1440 RPM, 1000 m³/hr (min.)
4.2	Scrubber (For De-rusting)	Confirm
4.3	Air Agitator: Air agitator is consisting of blower which is comprised of suction box with filters & distribution ducting/piping through all pre-treatment tanks.	Required capacity: 7.5 H.P. 1440 RPM, 500 m³/hr (min.)
4.4	Hoist	2 No's, 1 Ton capacity, electrically operated
4.4.1	Description: First Hoist is used for Pre-treatment process & another one is to take articles from pre-treatment tank to water drying oven	Confirm
4.5	No. of basket	Min. 7 nos.
4.5.1	Basket Size	2150L x 1000W x 1950H
4.5.2	Material Of Basket	S.S. 316
4.5.3	Weight of Basket (Empty)	Min.120-140 Kg
4.5.4	Weight of basket (With Components)	Min. 250 Kg
5	Water Drying Oven	
5.1	Working Size (mm)	Min. 2850L x 1200W x 2250H
5.2	Overall Size (mm)	Min. 3050L x 3000W x 2450H
5.3	Heat Source	LPG/CNG/PNG
5.4	Temperature Range (Min. – Max.)	120 C - 140 C
5.5	Initial Heating Time	Max. 55 Minutes
5.6	Material of Construction	CRCA and HR Steel
5.7	Insulation material to be used	Rock wool with density of 48 Kg/m³
5.8	Article Entry and Exit	Sliding doors (Pneumatic Type)
5.9	Finish Painting	Inside Heat Resistant Aluminium, Outside enamel paint
5.10	Safety	
5.10.1	Pressure Control	Confirm
5.10.2	Explosion Door :(with pre-define pressure) Explosion Door should act as a safety door in case of emergency this door will burst and the gas will escape out.	Confirm
5.10.3	Oven Working	Auto cycle
6	Powder Coating Booth (Back to Back Operator)	
6.1	Working Size (mm)	Min. 3000L x 1800W x 2600H
6.2	Powder Coating Booth Component Entry & Exit	Min. 1100 W X 1700 H
6.3	Windows for Operator (Both Sides)	Min. 900 W X 1700 H
6.4	Powder Recovery	Mono cyclone unit on side of booth with After Filter Unit- Reverse pulsing arrangement and Cartridges
6.5	Illuminations	400-600 lux (min.)
6.6	Material of Construction for Booth	Mild Steel
6.7	Construction	The booth is fabricated out of CRCA sheet Folded Paneling and Bolted construction.

6.8	Finish Painting	Booth and Cyclone is powder coated.
6.9	Powder Coating Gun (2 Nos.)	GEMA/Wagener/Parker Ionics/Triologics
6.10	Filter Cleaning System	Confirm
6.11	Manual touch up if required (back to back)	Confirm
7	Material Handling for Powder Coating	Overhead Conveyor
7.1	Conveyor Length	40 meter
7.2	Conveyor Speed	0.35-0.45 m/min (Variable Type)
7.3	Article Pitch	1200 mm
7.4	Chain Pitch	200 mm (min.)
7.4.1	Material of Chain	M.S.
8	Powder Curing Oven	
8.1	Oven Size – Working (mm)	Min. 4200L x 3200W x 2700H
8.2	Oven Size Overall (mm)	Min. 6600L x 3600W x 5300H (With Supports)
8.3	Dead zone	2000 mm
8.4	Heat Source	LPG/CNG/PNG
8.5	Temperature Range (Min.-Max.)	180°C - 220°C
8.6	Initial Heating Time.	Max. 55 minutes
8.7	Material of Construction	CRCA
8.8	Insulation	Rock Wool with density of 48 Kg/m ³ , 200 mm thick; only bottom 100 mm
8.9	Finish Paint for Oven	Inside Heat Resistant Aluminum, Outside enamel paint
8.10	Article Entry & Exit	1100W x 1100H
8.11	Safety	TIC (Temperature Indicator Controller)
8.12	Heat Loss Recovery System	To be arranged
8.13	Oven Calibration	TTR (Time Temperature Regulation) Report need to be submitted after Installation
8.14	Explosion Door :(with pre-define pressure) Explosion Door should act as a safety door in case of emergency this door will burst and the gas will escape out.	Confirm
8.15	Oven Working	Auto cycle
9	Control Panel	To control all equipments- Push button type
10	Cabling	From Nearest Electric Source to all Equipments (Provided at one location, Vendor to extend there on)
11	Exhaust Duct	Insulated till man height
12	Water Inlet Piping	At one point as per layout, further piping will be in supplier scope
13	Gas Piping with accessories & gas bank, gas train	ALIMCO Provide Gas point at one point inside the work shop, Vendor has to arrange internal piping and other accessories needed inside by himself
14	Drain	Proper Drainage along from Tank to Drain trench will be provided by vendor.
15	Consumables	Vendor should provide consumables list for 3 months with provide break up sheet along with bid.
16	Spares & Accessories	Vendor should provide all spares & accessories as per attached sheet for 2 years along with bid quoted separately
C	Make Sheet	

1	Burner	Ecoflam / Riello / FBR Burners/ Elco
2	Blower	Nadi / Vikas Air Fan / TCF/ Laxmi Air Control
3	Motor	CGL / ABB / Siemens/ Bharat-Bijlee/Kirloskar
4	Powder Coating Gun	GEMA / Wagner / Parker Ionics
D	Minimum technical criteria for vendors	
1	In house Manufacturing & Design Facility	Vendor must have minimum 5 years experience of manufacturing similar plants (proof of the same need to submit along with bid)
2	Min. 02 nos. drawings/layouts of similar type of powder coating plant Manufactured & executed by tenderer, should be attached.	Vendor to Confirm & submit relevant documents along with bid
E	Installation & Commissioning:	
1	Vendor to submit the internal layout/drawing, ALIMCO will provide civil construction accordingly.	Confirm
2	The complete installation and commissioning must be carried out by the supplier (Except Civil work) at the project site. Certificate of acceptance is to be signed by customer and supplier.	Confirm
3	As the product is consisting of hollow pipe, Vendor to ensure that while doing Pretreatment process water/Chemical did not settled inside the component after drying oven. Suitable arrangements should be done for it.	Confirm
4	Vendor to ensure loading and unloading of material at site.	Confirm
5	Vendor to ensure RO/DM plant for dip pre-treatment as per requirement	Confirm
6	Vendor to ensure necessary handling facility. at site during erection.	Confirm
8	Training must be provided at final destination place-	Confirm
8.1	Operator training	Min.7 days
8.2	Maintenance course mechanical, electrical and electronic (All inclusive)	Min. 5 days
F	GENERAL OPERATING CONDITION	
1	3 Phase 415V +/- 10%, Frequency 50 Hz +/- 3%	Confirm
2	Protection level for all electrical items	IP54 or better
3	Complete electrical system should be tropicalized for Indian condition 5 to 50 °C temp and RH 100%	Confirm

DELIVERY PERIOD INCLUDING INSTALLATION & COMMISSIONING:

The delivery period including installation & commissioning of all of the machine/ equipment/ items at the destination mentioned in Para 1 on page no. 02 of the tender documents will be 05 months from the date of placement of Purchase Order/work contract.

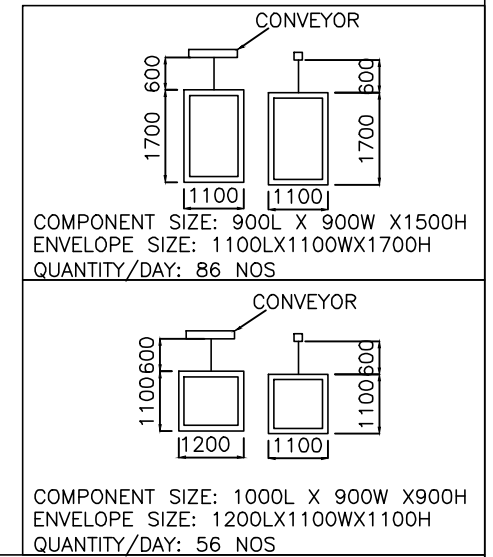
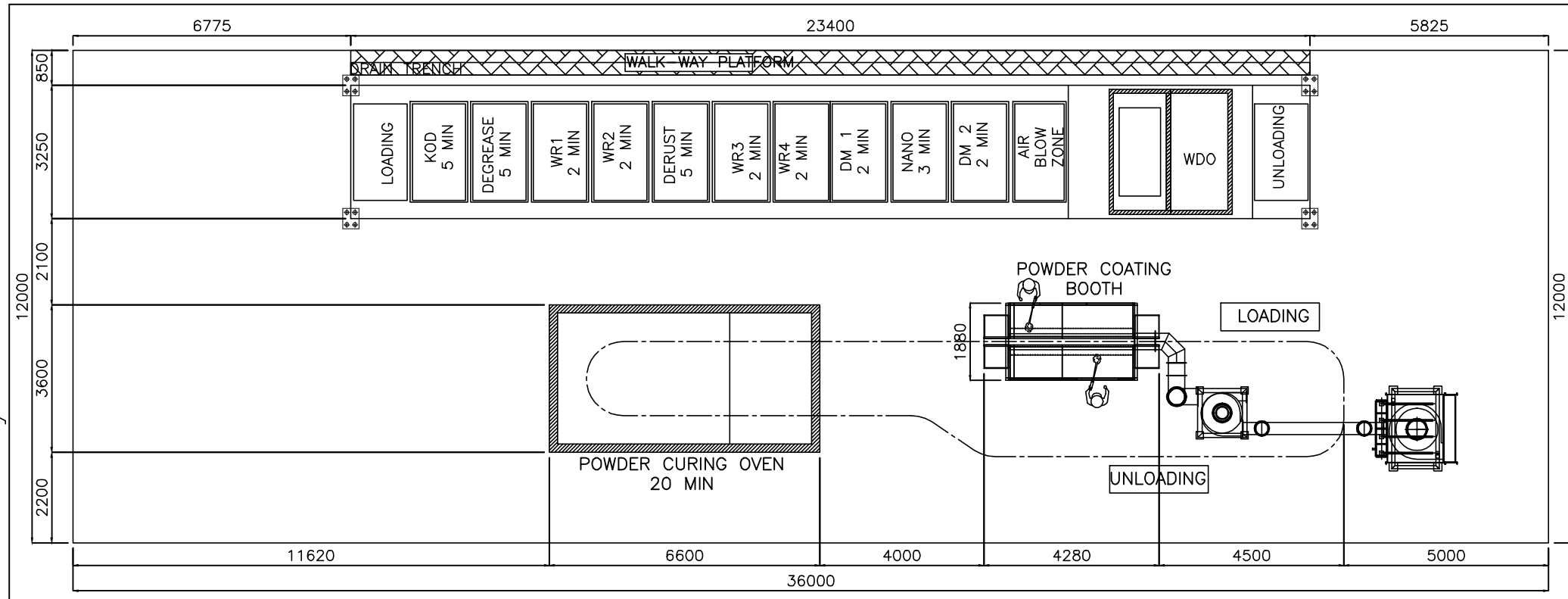
WARRANTY:

The entire machine/ equipment/ item inclusive of all system/accessories should be covered under warranty for a period of 24 months (min.) from the date of commissioning.

Note:

1. Machine/ equipment/ item shall be supplied with 3 sets of comprehensive operation and maintenance manual.
2. Breakdown calls to be attended within 48 hrs.
3. Supply to be done on Turnkey Basis. ALIMCO shall provide electrical, water supply, gas supply and air supply point near to the place of installation.
4. Civil foundation details and drawings with specifications to be provided by the tenderer.
5. Total power consumption (in KW) to be provided by the tenderer.

* Layout given is only indicative one for reference only.



BASKET SIZE: 2150LX1000WX1950H
 TANK SIZE: 2350LX1300WX2150H- AMB
 2350LX1300WX2450H- HOT

DIP PRETREATMENT PLANT

NO.	PROCESS	TIMING	TEMP
01.	KOD	5 MIN	55°C
02.	DEGREASE	5 MIN	55°C
03.	WR1	2 MIN	AMB.
04.	WR2	2 MIN	AMB.
05.	DERUSTING	5 MIN	AMB.
06.	WR3	2 MIN	AMB.
07.	WR4	2 MIN	AMB.
08.	DM 1	2 MIN	AMB.
09.	NANO	3 MIN	AMB.
10.	DM 2	2 MIN	AMB.

OVERHEAD CONVEYOR	WATER DRYING OVEN- 1 NO
LENGTH: 50 METER ARTICLE PITCH: 1200 MM SPEED: 0.4 M/MIN	SIZE 2850 L X1300 W X 2150 H HEATER BOX AT SIDE OF OVEN LPG DIRECT FIRED
POWDER CURING OVEN- 1 NOS	POWDER COATING BOOTH
SIZE 4200 L X 3200 W X 2800 H HEATER BOX AT TOP OF OVEN LPG DIRECT FIRED	SIZE 3000L X 1800 W X 2800 H ARTICLE CUTOUT-1100 W X 1700 H OPERATOR CUTOUT-900W X 1700H POWDER RECOVERY-CYCLONE TYPE

M/s ARTIFICIAL LIMBS MANUFACTURING CORPORATION OF INDIA

SCALE	DRAWN BY: VK	CHECKED: RONIT	APPROVED: JBR	744	TITLE:- LAYOUT POWDER COATING PLANT WITH DIP PT.
1:1					
DATE :- 26/06/18		REV :-02			
					DRG.NO.
					AL/744/LR/R2
02	CHANGE OF PRETREATMENT PROCESS	SNS	23/6	ALL DIMNS. ARE IN MM	
01	CHANGE OF TANK SIZE & PROCESS	SNS	6/02	DO NOT SCALE THE DRAWING	
NO.	CHANGE OF RECORD	SIGN.	DATE		

List of Recommended Spares for DIP Pre Treatment :

Sr. no.	Description	Quantity
1	Spares for 100 lpm/12 m head Pump (For Nano Tank)	1 set
	Impellor set with Nut & washer	
2	Fume Extractor Blower Impellor(for 1000 M3/hr)	1 no.
3	Air Blow Blower Impellor (for 6000 M3/hr/60 mm w.g.)	1 no.
4	Gas fired Burner Ecoflam make Max gas 250 KW	1 no. or as per manufacturers recommendation
5	Air Agitation Blower 500 m3/hr-2000 mm a.g.	1 no.
6	RTD - pt-100 sensor , L=300 mm	1 no
7	Filter cartridge for Nano filter (Concept make)	1 set

List of Recommended Spares for Water Drying Oven:

Sr. no.	Description	Quantity
1	Gas fired Burner Ecoflam make Max gas 40 KW	1 no. or as per manufacturers recommendation
2	Circulation Air Blower Impellor (for 5000 M3/hr/65 mm w.g.)	1 no
	Plummer Block with bearing V groove pulleys (motor & shaft side) V belts	1 no. Each 1 no 2 no
3	Pneumatic Cylinder DA 63 / stroke 600 mm Jenetics make or as per vendor recommendation	1 set
	Flow control valve	1 set
	Dial press. Gauge 0-7 bar	1 no
	Conical silencer	1 no
	Magnetic sensor(Reed switch)	2 no
5	Solenoid valve coil ,230 V.A.C.	1 no
	Differential press.switch Orion make or as per vendor	1 no

	recommendation CF-85 5-50 mm w.g. with NO+NC contact	
6	RTD - pt-100 sensor , L=300 mm	1 no
7	Air directional blinds	2 no

List of Recomendated Spares for Powder Coating Booth:

Sr. no.	Description	Quantity
1	P.C.Booth Blower Impellor for 8000 m ³ /hr, 350 mm w.g.	1 no.
2	Filter cartridge 327 mm dia*982 mm Long, filter area =16 m ² Ventury 327 mm dia*245 Long	2 set 2 set
3	Panel Filters 610x610x305mm,capacity 2160cmph/sq. mtr	1 set
4	Pulse solenoid valves 1 1 / 2 “ ,Type MEP 114230 Only coil suitable for above 230 V.A.C.	2no 2 no

List of Recomendated Spares for Powder Curing Oven:

Sr. no.	Description	Quantity
1	Gas fired Burner Ecoflam make Maxgas 120 KW	1 no. or as per manufacturers recommendation
2	Circulation Air Blower Impellor (for 3500 M ³ /hr/ 65 mm w.g.) Plummer Block with bearing V groove pulleys (motor & shaft side) V belts	C.W./C.C.W each1 no Each 1 no. Each 2 no 4 no
4	Differential press. switch Orion make or as per vendor recommendations CF-85 5-50 mm w.g. with NO+NC contact	1 no
5	RTD - pt-100 sensor , L=300 mm	1 no

6	Air directional blinds	2 no
7	Conveyor Vinar/ Saify con-fab	As per manufacturers recommendation

List of spares for Control panel:

Sr.no	Description	Quantity
1	Incoming side MCB - A , Siemens make or as per vendor recommendation	1 no
4	Green / Red Luminous Push buttons ,2AF Teknik make or as per vendor recommendation	Each 2no
5	R,Y, B, indicators 2PLBRL	Each 1 no
9	Timers Star Delta	1 no
10	Timer on delay	1No.
11	Temperature Indicator Controller pt-100 actuated, 2 set & 1 set point DTC203 /204	Each 1 no.
12	Single phasing preventer VSPD1	1 no
13	Connectors 2.5/4 /6	Each 5 no
14	Connectors 2.5 with glass fuse	2 no.
15	Relay, 2 CO - MY2 ,4 CO - MY4	Each 2 no
16	Hooter 230 V AC	1 no