

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

## Technical Specification - Hot Air Oven

Sr.No.	Items	Units	Specification
1	Capacity	Ltr	200 and above (100 kg)
2	Display	-	Digital
3	Inner Size (WxDxH)	cm	specify
4	Heater Load	Kg/Hr	specify
5	No. Of Shelves	nos	6 - 10
6	Temperature Range	deg C	Upto 300
7	Temperature Uniformity	-	+/- 2 deg C
8	Insulation	-	specify
9	Safety Device	-	Thermostat/ specify
10	Type	-	Forced Convection System/ others
11	Temperature Controller	-	Digital Temperature Controller Cum Indicator
12	Inner & Outer Body	-	Made out of Stainless Steel
13	Electrical Supply	-	Specify
14	Essential Spares	-	Specify
15	Total Connected Load	Kw	specify
16	Training		One day Training should be provided after installation.
17	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Dehumidifying Drier Unit			
SL. No.	Items	Units	Purchaser's Specification
1	Drying Bin Volume	Ltr	100-125
2	Dry air quantity	m3/hr	Please specify
3	Dew point	°C	Please specify
4	Temperature range	°C	60-140
5	Dimensions	-	Please specify
6	Machine Tonnage	Ton	Upto 300 Tons
7	Throughput	(kg/hr)	Upto 80 kg/hr
8	Materials to be used	-	PC,PET,NYLON,PBT,POM,SAN,ACRYLIC,HIPS,ABS
9	Standard accessories	-	Please quote
10	Safety	-	Appropriate safety features to be provided, Alarm etc
11	Scope of conveying System	-	Auto Loader –To feed material to Dehumidifier and subsequently to Injection Moulding.
12	Total Connected Load	Kw	Please Specify
13	Training		One day Training should be provided after installation.
14	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - DRY MIXER /TUMBLE BLENDER FOR PLASTICS GRANULES			
SL. No.	Items	Units	Purchaser's Specification
1	Conatiner Capacity (Min.-Max.)	Kg	100-125
2	Rotating Speed	rpm	Please specify
3	Vessel/Container	-	Rotor blade and Vessel should be made out of SS
4	Safety	-	Appropriate safety features to be provided
5	Total Connected Load	Kw	Please Specify
6	Training		One day Training should be provided after installation.
7	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - SCRAP GRINDER			
SL. No.	Items	Units	Specification
1	Output per hour	Kgs	Min. 250 Kgs to 700 Kgs
2	Main motor	H.P	Specify
3	Blade metal	-	High Carbon High Chromium Die Steel.
4	Blade length	-	Specify
5	Fixed blades	-	Min. 4 nos
6	Rotating blades	-	Min. 6 nos
7	Spare fixed blades	-	Min 4 nos
8	Spare rotary blades	-	Min. 6 nos
9	Mesh plate	mm	Mesh size (10 mm)
10	Mesh plate	mm	Mesh size (6 mm)
11	Dust Collector System (mandatory)	-	Specify
12	Vibro magnet filter (optional)	-	It should be placed below the output area of scraps. The magnet filter will vibrate for filtrating the scraps from metal particles.
13	Mouth area	mm	900mmX600 mm(Minimum)
14	Material to be Grind	-	HDPE, LLDPE, PP, ABS, HIPS. Nylon & PC
15	Total Connected Load	Kw	Specify
16	Training		One day Training should be provided after installation.
17	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - FRP COOLING TOWER- 50 TR			
SL. No.	Items	Units	Specification
1	Capacity	TR	50
2	Type	-	Induced Draft (Square or Round) Counter Flow
3	Water flow rate	LPM	Specify
4	Hot water temperature	°C	50
5	Cold water temperature	°C	28
6	Wet bulb temperature	°C	Specify
7	Inlet, outlet connection size	mm/inch	Specify
8	Fan Material	-	Specify
9	No. of Motor/HP/RPM		Specify
10	Casing Material	-	Specify
11	Fills Shape	-	Specify
12	Fills Material	-	Specify
13	Nozzles Material	-	Specify
14	Tub Capacity	Liter	Min. 1500
15	Tub Material	-	Specify
16	Header Material	-	Specify
17	All fastners, nut, bolts etc	-	Should be made of SS
18	Mounting/Placement of Cooling Tower		Mounting/Placement of Cooling Tower must be on Tub.
19	Total Connected Load	Kw	Specify
16	Training		One day Training should be provided after installation.
17	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - SEMI AUTOMATIC VERTICAL INJECTION MOULDING MACHINE : 30-40 TONS			
SL. No.	Items	Units	Specification
1	Shot Capacity (in GPPS)	g	Min. 40
2	SCREW DIAMETER	mm	25-40
3	SCREW L/D RATIO	-	
4	INJECTION PRESSURE	bar	Min.1200 and above
5	INJECTION Speed	mm/sec	Specify
6	INJECTION RATE	cc/sec	Min. 35 and above
7	PLASTICIZING RATE (GPPS)	gm/sec	Specify (higher will be preferred)
8	Max. SCREW SPEED	rpm	Min. 170
9	Heating Capacity	kw	Specify
10	Bi-metallic Screw Barrel	-	(Optional) Specify
	<b>Clamping Unit</b>		
11	CLAMP FORCE	ton	30-40
12	Mould Opening Stroke	mm	Min. 180 and above
13	MAXIMUM DAYLIGHT	mm	340 and above
14	MINIMUM MOULD HEIGHT	mm	Specify
15	Maximum Mould Height	mm	Min. 150 and above
16	PLATEN SIZE	mm	Specify
17	DISTANCE BETWEEN TIE ROD	mm	min. 210 x 210 and above
18	EJECTOR STROKE	mm	Min 10 and above
19	EJECTOR FORCE	ton	Min. 3.5 and above
20	MOULD WEIGHT CAPACITY	kg	Specify
21	Clamping Mechanism	-	Specify
	<b>General</b>		
22	Control System	-	Specify
23	T Slot Platen	-	Specify (T Slot is Preferred)
24	Water inlet & outlet manifold for Mould cooling	-	Min. 4/4 Channel
25	Hopper Capacity	Kg	Specify for suitable capacity
26	Essential/Standard spares	-	Specify (Standard Tool Kit, Thermocouple, Band Heater, Short/Extended Nozzle, SSR, Proximity Switch, Limit Switch, Mould Clamps, T-Nut and Studs, Etc.,)
27	MTC (Oil Type)	-	Specify
28	Safety	-	Specify the Special safety provisions
29	Motor load	-	Specify
30	Total Connected Load	Kw	Specify
31	Training		One day Training should be provided after installation.
32	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

## Technical Specification - SEMI AUTOMATIC HORIZONTAL INJECTION MOULDING MACHINE : 30-40 TONS

SL. No.	Items	Units	Specification
	<b>Injection Unit</b>		
1	Shot Capacity (in GPPS)	g	Min. 50 and above
2	SCREW DIAMETER	mm	20-30
3	SCREW L/D RATIO	-	18:1 - 21:1
4	INJECTION PRESSURE	bar	Min.1600
5	INJECTION Speed	mm/sec	Specify
6	INJECTION RATE	cc/sec	Min. 20
7	PLASTICIZING RATE (GPPS)	gm/sec	Specify (higher will be preferred)
8	Max. SCREW SPEED	rpm	Min. 170
9	Heating Capacity	kw	Specify
10	Bi-metallic Screw Barrel	-	(Optional) Specify
	<b>Clamping Unit</b>		
11	CLAMP FORCE	ton	30-40
12	Mould Opening Stroke	mm	Min. 180
13	MAXIMUM DAYLIGHT	mm	Min.350
14	MINIMUM MOULD HEIGHT	mm	Specify
15	Maximum Mould Height	mm	Min. 155 and above
16	PLATEN SIZE	mm	Specify
17	DISTANCE BETWEEN TIEROD	mm	Min. 210 x 210 above
18	EJECTOR STROKE	mm	Min. 13
19	EJECTOR FORCE	ton	Min. 4
20	MOULD WEIGHT CAPACITY	kg	Specify
21	Clamping Mechanism	-	Specify
	<b>General</b>		
22	Control System	-	Specify
23	T Slot Platen	-	Specify (T Slot is Preferred)
24	Water inlet & outlet manifold for Mould cooling	-	Min. 4/4 Channel
25	Hopper Capacity	Kg	Specify for suitable capacity
26	Essential/Standard spares	-	Specify (Standard Tool Kit, NRV, Thermocouple, Band Heater, Short/Extended Nozzle, SSR, Proximity Switch, Limit Switch, Mould Clamps, T-Nut and Studs, Etc.,)
27	MTC (Oil Type)	-	Specify
28	Safety	-	Specify the Special safety provisions
29	Motor load	-	Specify
30	Total Connected Load	Kw	Specify
31	Training		One day Training should be provided after installation.
32	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - PIPE EXTRUSION UNIT WITH JOCKEY EXTRUDER FOR LINE MARKING			
Sr.No.	Items	Units	Specification
1	Polymer to be processed	-	LDPE / HDPE / PP
2	Screw Diameter	mm	30 – 45mm
3	L/D Ratio	-	Please specify
4	Output	Kg / hr	Please specify
5	Pipe / Tube Outside Dimensions	mm	16 - 110 mm dia Pipe
6	Calibration / Sizing/Cooling tank Vacuum Operated with Suitable Stainless Steel Cooling Tank with arrangement of Re- circulating Water for cooling.	-	Please specify
7	Haul off unit (Suitable Haul off Unit with PLC control)	-	Please specify
8	Cutter - Synchronized cutter to be incorporated for both flexible and rigid pipe/tube.	-	Please specify
9	Inline pipe printing machine (Automatic) Mandatory	-	Please specify
10	Die Size (mandatory)	mm	20 mm, 63 mm,90 mm (for round pipe)
11	Control System	-	Microprocessor/ PLC Controls/ Computer Integrated Control
12	Safety	-	Appropriate safety features to be provided
13	Standard spares	--	Please specify
14	Total Connected Load	Kw	Please Specify
16	Training		One day Training should be provided after installation.
17	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.



# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - SINGLE LAYER EXTRUSION BLOWN FILM UNIT WITH CORONA TREATER			
Sr.N	Items	Units	Specification
1	Min. Lay Flat Width	mm	Specify
2	Max. Lay Flat Width	mm	Specify
3	Thickness	micron	20 to 100
4	Output Range	kg/ Hr	Min.25
5	Material to be processed	-	LDPE, LLDPE, HDPE
6	Control System	-	Microprocessor
7	Plant should have either rotating/Oscillating Die/Oscillating nip	-	Specify
8	Melt temperature sensor & Melt Pressure transducers	-	Specify
9	Separate Die for HMHDPE & LLDPE	-	Specify
10	Corona Treater	-	Specify
11	Safety	-	Appropriate safety features to be provided
12	Machine dimensions	mtr	Specify
13	Essential Spares	-	Specify
14	Total Connected Load	Kw	Specify
15	Training		One day Training should be provided after installation.
16	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - MULTILAYER EXTRUSION BLOWN FILM UNIT			
Sr.No.	Items	Units	Specification
1	Extruder -Three layer	3 nos.	Multipurpose single screw (ABC Type)
2	Lay Flat Width	mm	Specify
3	Screw Diameter	mm	25 – 50
4	Screw Speed	RPM	Specify
5	Screw L/D Ratio	-	Specify
6	Extruder Output	Kg/hr	40 - 200
7	Main Motor	HP	Specify
8	Drive Type	-	Specify
9	Film Thickness	Micron	20 - 150
10	Bubble Cooling type	-	Specify
11	Line Speed	Mtrs/Min	Specify
12	Material	-	All Thermoplastic materials
13	Heating system	-	PID Temperature controller system in all Zones including die.
14	Heaters capacity	kw	Specify
15	Lay Flat Width	mm	150 - 800
16	Control System- Microprocessor type, Plant should have either rotating/Oscillating, Die/Oscillating nip, MeltTemperature Sensor & Melt Pressure Transducers.	-	Specify
17	Synchronised Winder control, cooling air ring, irish ring with gusseting device and slitting with dual winder.		Specify
18	Nip Roller Closing mechanism	-	Specify
19	Suitable Die sets to be provided	-	Specify
20	Corona Treater	-	Specify
21	Safety	-	Appropriate safety features to be provided
22	Essential Spares	-	Specify
23	Total Connected Load	Kw	Specify
24	Training		One day Training should be provided after installation.
25	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.
26	Training		One day Training should be provided after installation.
27	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - HIGH SPEED MIXER			
Sr.No.	Items	Units	Specification
1	Mixing capacity	Kg	35-50
2	Drive (Dual Speed)		Please Specify
3	Mixing Time	Min	8-12
4	Rotar speed	Rpm	Please Specify
5	Vessel/ Container		Made out of double walled with water cooling facility, inner wall, rotor blade and wiper should be made out of SS, Hot and Cold Mixture Suitable for PVC
6	Power Supply		Please Specify
7	Safety		Appropriate safety features to be provided
8	Drive control Pannel with Temp,Torque,& Timer with Hooter		Please Specify
9	Temperature indicator/timer		Please Specify
10	Essential Spares		Please Specify
11	Total Connected Load	Kw	Please Specify
12	Training		One day Training should be provided after installation.
13	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - AUTOMATIC BLOW MOLDING MACHINE-1/2 LITRE- A1			
Sr.No.	Items	Units	Specification
1	Container Capacity	ml	500 ml
2	Screw Diameter	mm	25 - 40 mm
3	Screw Speed	RPM	Please specify
4	Mould Opening Stroke	mm	Please specify
5	Min. Mould Thickness	mm	Please specify
6	Parison control System	Points	Please specify
7	Hot knife/ wire cutter	-	Please specify
8	Clamping force	Ton	Please specify
9	Single station with Single Head	-	Please specify
10	Moulds(Mandatory)		
a	500 ml (qty. 1 no.)	-	Moulds suitable for this machine Refer <b>Annexure- 1</b> having Standard Neck Dia. and Standard thread profile, Mould Material - EN -31 or Better.
b	500 ml (qty. 1 no.)	-	
11	De-flashing system (Mandatory)	-	Please specify about Auto deflashing
12	Additional Cup and Mandril shall be provided for different size parison diameter.	-	Please specify
13	Control System	-	Microprocessor/ PLC /PID Controller - Please specify and quote
14	Safety	-	Appropriate safety features to be provided
15	Essential spares	-	Please specify
16	Total Connected Load	Kw	Please Specify
17	Training		One day Training should be provided after installation.
18	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

E-Tender No.: CIPET/KRB/MACHINE&EQP/2020-21/**01**

**Name of Equipment:** AUTOMATIC BLOW MOLDING MACHINE-1/2 LITRE- A1

**Description:** Sample image of product for Mould.



a) HDPE Bottle – 500 ml



b) HDPE Bottle – 500 ml

\*Note - same neck dia. & height (for common cap) for both 500 ml jar

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - AUTOMATIC BLOW MOLDING MACHINE-1/2 LITRE- A2			
Sr.No.	Items	Units	Specification
1	Container Capacity	ml	500 ml
2	Screw Diameter	mm	25 - 40 mm
3	Screw Speed	RPM	Please specify
4	Mould Opening Stroke	mm	Please specify
5	Min. Mould Thickness	mm	Please specify
6	Parison control System	Points	Please specify
7	Hot knife/ wire cutter	-	Please specify
8	Clamping force	Ton	Please specify
9	Single station with Single Head	-	Please specify
10	Moulds(Mandatory)		
a	500 ml (qty. 1 no.)	-	Moulds suitable for this machine Refer <b>Annexure- 1</b> having Standard Neck Dia. and Standard thread profile, Mould Material - EN -31 or Better.
b	500 ml (qty. 1 no.)	-	
11	De-flashing system (Mandatory)	-	Please specify about Auto deflashing
12	Additional Cup and Mandril shall be provided for different size parison diameter.	-	Please specify
13	Control System	-	Microprocessor/ PLC /PID Controller - Please specify and quote
14	Safety	-	Appropriate safety features to be provided
15	Essential spares	-	Please specify
16	Total Connected Load	Kw	Please Specify
17	Training		One day Training should be provided after installation.
18	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

E-Tender No.: CIPET/KRB/MACHINE&EQP/2020-21/01

**Name of Equipment:** AUTOMATIC BLOW MOLDING MACHINE-1/2 LITRE- A2

**Description:** Sample image of product for Mould.



a) HDPE Jar – 100 ml



b) HDPE Jar – 100 ml

\*Note – same neck dia.& height (for common cap) for both 100 ml jar

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - MICROPROCESSOR CONTROLLED SINGLE LAYER DOUBLE STATION EXTRUSION BLOW MOULDING WITH PARISON PROGRAMMING, Capacity - 1 LITRE-B1			
Sr.No.	Items	Units	Specification
1	Container Capacity	ml	500 - 1000
2	Die Diameter	mm	20-80
3	Screw Diameter	mm	40-50
4	Screw L/D ratio	--	20:1 - 22: 1
5	Output (Plasticizing Capacity)	Kg/Hr.	20-75
6	Mould Height	mm	Min. 200 and above
7	Mould Width	mm	Min. 180 and above
8	Mould Thickness	mm	170 and above
9	Mould opening Stroke	mm	150 and above
10	Clamping Force (Desirable)	Ton	Please Specify
11	Extruder Drive Motor	KW(HP)	Please Specify
12	Servo Hydraulic Motor	KW(HP)	Please Specify
13	Heating Load	KW(HP)	Please Specify
14	Parison control System	Points	Multipoint parison control system for Minimum 100 point
15	Hot knife/ wire cutter		Please Specify
16	Double Station with Single Head		Please Specify
17	Moulds (Mandatory)		
a	500 ml (qty. 1 no.)		Moulds suitable for this machine Refer <b>Annexure- 1</b> having Standard Neck Dia. and Standard thread profile, Mould Material - EN -31 or Better.
b	500 ml (qty. 1 no.)		
18	Additional Cup and Mandril shall be provided for different size parison diameter.	-	Please specify
19	Control System	-	Microprocessor/Computer Integrated control
20	Angular Blowing Attachment (Mandatory)	-	Please Specify
21	De-flashing system (Mandatory)	-	Please Specify
22	Safety	-	Appropriate safety features to be provided
23	Essential spares	-	Please Specify
	<b>Optional Spares</b>		
24	Water Inlet/Outlet Manifold for mould cooling		Please Specify
25	Bottom Bowing System		Please Specify
26	Double Head Attachment and Double station		Please Specify
27	Total Connected Load	Kw	Please Specify
28	Training		One day Training should be provided after installation.
29	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.



E-Tender No.: CIPET/KRB/MACHINE&EQP/2020-21/01

**Name of Equipment:** MICROPROCESSOR CONTROLLED SINGLE LAYER DOUBLE STATION EXTRUSION BLOW MOULDING WITH PARISON PROGRAMMING, Capacity - 1 LITRE-B1

**Description:** Sample image of product for Mould.



a) HDPE Bottle – 500 ml



b) HDPE Bottle – 500 ml

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - MICROPROCESSOR CONTROLLED SINGLE LAYER DOUBLE STATION EXTRUSION BLOW MOULDING WITH PARISON PROGRAMMING, Capacity - 1 LITRE- B2			
Sr.No	Items	Units	Specification
1	Container Capacity	ml	500 - 1000
2	Die Diameter	mm	20-80
3	Screw Diameter	mm	40-50
4	Screw L/D ratio	--	20:1 - 22: 1
5	Output (Plasticizing Capacity)	Kg/Hr.	20-75
6	Mould Height	mm	Min. 200 and above
7	Mould Width	mm	Min. 180 and above
8	Mould Thickness	mm	170 and above
9	Mould opening Stroke	mm	150 and above
10	Clamping Force (Desirable)	Ton	Please Specify
11	Extruder Drive Motor	KW(HP)	Please Specify
12	Servo Hydraulic Motor	KW(HP)	Please Specify
13	Heating Load	KW(HP)	Please Specify
14	Parison control System	Points	Multipoint parison control system for Minimum 100 point
15	Hot knife/ wire cutter		Please Specify
16	Double Station with Single Head		Please Specify
17	Moulds (Mandatory)		
a	1000 ml (qty. 1 no.)		Moulds suitable for this machine Refer <b>Annexure- 1</b> having Standard Neck Dia. and Standard thread profile, Mould Material - EN -31 or Better.
b	1000 ml (qty. 1 no.)		
18	Additional Cup and Mandril shall be provided for different size parison diameter.	-	Please specify
19	Control System	-	Microprocessor/Computer Integrated control
20	Angular Blowing Attachment (Mandatory)	-	Please Specify
21	De-flashing system (Mandatory)	-	Please Specify
22	Safety	-	Appropriate safety features to be provided
23	Essential spares	-	Please Specify
	<b>Optional Spares</b>		
24	Water Inlet/Outlet Manifold for mould cooling		Please Specify
25	Bottom Bowing System		Please Specify
26	Double Head Attachment and Double station		Please Specify
27	Total Connected Load	Kw	Please Specify
28	Training		One day Training should be provided after installation.
29	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

E-Tender No.: CIPET/KRB/MACHINE&EQP/2020-21/**01**

**Name of Equipment:** MICROPROCESSOR CONTROLLED SINGLE LAYER DOUBLE STATION EXTRUSION BLOW MOULDING WITH PARISON PROGRAMMING, Capacity - 1 LITRE-B2

**Description:** Sample image of product for Mould.



a) HDPE Bottle – 1000 ml



b) HDPE Bottle – 1000 ml

\*Note – same neck dia.& height (for common cap) for both 1000 ml jar

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - AIR COMPRESSOR			
Sr.No.	Items	Units	Specification
1	Working Pressure	Bar	30-35
2	Capacity	Ltr	Min. 500 & above
3	Mounting Type	-	Please specify
4	Moisture Separator	-	Please specify & Quote
5	Other requirement	-	Automatic Cut Off system after pressure buildup and Automatic On when pressure loss
6	Air Dryer	-	Refrigerated Air Dryer High Pressure
7	Pre & After Filter High Pressure	-	Please specify
8	Safety	-	Appropriate safety features to be provided like Alarm, pressure relief value, etc.
9	Main Motor	HP	Please specify
10	Total Connected Load	Kw	Please Specify
11	Training		One day Training should be provided after installation.
12	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - ROTATIONAL MOULDING MACHINE- 500 L			
Sr.No	Items	Units	Specification
1	Type of machine	-	Single station bi-axial with suitable type arm capacity of mounting molds of min. 500 litres capacity
2	Oven Chamber	-	SS Construction with adequate insulation and an inspection window. Top loading system with ladder for multilayer tanks.
3	No. of station	No.	Single
4	Burner	-	LPG Burner with safety features system
5	Re-circulating Blower	-	Made of stainless steel
6	Arms		Heavy duty arm to take up a mould of min. 500 litre. (biaxial rotation)
	<b>Additional Features :</b>		
7	Mould (Mandatory) Supply two mould suitable for this machine		Refer <b>Annexure-1</b>
7.1	Garbage/Dust Bin 100 Liter with Lid		Please Specify
7.2	Water tank - 500 liter (round shape)		Please Specify
8	Laser gun for surface temperature measurement (range ambient to 250°C)	-	Please Specify
9	Safety	-	Appropriate safety features to be provided
10	Essential Spares	-	Please Specify
11	Multilayer attachment/accessories		Please Specify
12	Total Connected Load	Kw	Please Specify
13	Training		One day Training should be provided after installation.
14	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

E-Tender No.: CIPET/KRB/MACHINE&EQP/2020-21/01

**Name of Equipment: ROTATIONAL MOULDING MACHINE- 500 L**

**Description: Sample image of product for Mould of ROTATIONAL MOULDING MACHINE- 500 L**

Garbage/Dust Bin **100 Liter** with Lid

(Garbage/Dust Bin with Lid Mould for product similar to as given below shall be provided)



Water tank - **500 liter** (round shape)

(Water tank Mould for tank similar as given below shall be provided)



# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - PULVERISER			
Sr.No.	Items	Units	Specification
1	Pulveriser type	-	Disc Mill
2	Disc diameter	mm	Please specify
3	Raw Material Used	-	LLDPE and suitable material for rotational moulding
4	Output	kg/Hr	60 - 80
5	Particle size	US Mesh	35 - 45
6	Vibro siever	-	Please specify
7	Air lock valve	-	Please specify
8	Blower Motor	HP	Please specify
9	Water Cooling at		Starter ,Rotar ,Main Shaft
10	Main Mill motor	HP	Please specify
11	Control Panel	-	PLC control
12	Safety		Appropriate safety features to be provided, Alarm etc
13	Total Connected Load	Kw	Please Specify
14	Training		One day Training should be provided after installation.
15	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

## Technical Specification - ALL ELECTRIC MICROPROCESSOR CONTROLLED AUTOMATIC INJECTION MOULDING MACHINE 180-200T

Sr.No.	Items	Units	Specification
	<b>Injection Unit</b>		
1	Shot Capacity (In Gpps)	g	Min. 200 and above
2	Screw Diameter	mm	40-55
3	Screw L/D Ratio	-	20:1 to 22:1
4	Injection Pressure	bar	Min. 2000
5	Injection Speed	mm/sec	Min. 280
6	Injection Rate	cc/sec	Min. 300
7	Plasticizing Rate (Gpps)	gm/sec	Min. 30
8	Max. Screw Speed	rpm	Please Specify
9	Bi-Metallic Screw Barrel (Optional)	-	Please Specify
10	Heating Capacity	kw	Please Specify
	<b>Clamping Unit</b>		
11	Clamp Force	ton	180-200
12	Mould Opening Stroke	mm	Please Specify
13	Maximum Daylight	mm	(1000 and above) Specify
14	Minimum Mould Height	mm	max.200
15	Maximum Mould Height	mm	Min. 550 and above
16	Platen Size	mm	min. 750 x 750 and above
17	Distance Between Tie Rod (Edge to Edge - Inner)	mm	Min. 500 X 500 and above
18	Ejector Stroke	mm	Minimum 100 (Multi point and Multi Stage) Specify
19	Ejector Force	ton	Please Specify
20	Mould Weight Capacity	kg	Please Specify
21	Hydraulic Multiple Core Pulling Unit	-	Please Specify (Minimum 2 core pulling)
22	Multi Stage Air Ejection	-	Please Specify (Minimum 5 point)
	<b>General</b>		
23	T Slot Platen	-	Please Specify (T Slot is Preferred)
24	Latest Square Platen	-	Please Specify
25	Latest Technology Injection unit on LM guides	-	Please Specify
26	Robot Interface	-	Please Specify
27	Hot Runner Interface	-	Specify and Quote (Minimum 4 Zones)
28	Interface for Gas Assisted Injection	-	Please Specify
29	Water inlet & outlet manifold for Mould cooling	-	Min. 10/10 Channel
30	Computer connectivity	-	Please Specify
31	Hopper loader cum drier	-	Specify for suitable capacity
32	Essential/Standard spares	-	Specify and Quote (Standard Tool Kit, NRV, Thermocouple, Band Heater, Short/Extended Nozzle, SSR, Proximity Switch, Limit Switch, Mould Clamps, T-Nut and Studs, Etc.,)
33	MTC (Oil Type)	-	Please Specify
34	Safety	-	Specify the Special safety provisions
36	Total Connected Load	Kw	Please Specify
37	Training		One day Training should be provided after installation.
38	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.



# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - MICROPROCESSOR CONTROLLED AUTOMATIC INJECTION MOULDING MACHINE 275-300T			
Sr.No	Items	Units	Specification
	<b>Injection Unit</b>		
1	Shot Capacity (in GPPS)	g	Min.1200 and above
2	Screw Diameter	mm	70 - 80
3	Screw L/D ratio	-	20:1 to 22:1
4	Injection Pressure	bar	1800 and above
5	Injection Speed	mm/sec	Specify
6	Injection Rate	cc/sec	345 and above
7	Plasticizing Rate (Gpps)	gm/sec	Specify (higher will be preferred)
8	Max. Screw Speed	rpm	Specify
9	Heating Capacity	kw	Specify
10	Bi-metallic Screw Barrel	-	(Optional) Specify
	<b>Clamping Unit</b>		
11	Clamp Force	ton	250-300
12	Mould Opening Stroke	mm	600 and above
13	Maximum Daylight	mm	1300 and above
14	Minimum Mould Height	mm	max.200
15	Maximum Mould Height	mm	Min. 350 and above
16	Platen Size	mm	900 x 900 and above
17	Distance Between Tie Rod	mm	Min. 650 X 650 above
18	Ejector Strock	mm	Minimum 100 (Multi point and Multi Stage) Specify
19	Ejector Force	ton	Please Specify
20	Mould Weight Capacity	kg	Please Specify
21	Hydraulic Multiple core pulling unit	-	specify (Minimum 2 core pulling)
22	Multi stage Air Ejection	-	Specify (Minimum 5 point)
23	Clamping Mechanism	-	Please Specify
	<b>General</b>		
24	T Slot Platen	-	Specify (T Slot is Preferred)
25	Latest Square Platen and Latest Technology Injection	-	Please Specify
26	Unit on LM guides	-	Please Specify
27	Robot Interface	-	Please Specify
28	Hot Runner Inerface	-	Specify (Minimum 4 Zones)
29	Interface for Gas Assisted Injection	-	Please Specify
30	Water inlet & outlet manifold for Mould cooling	-	Min. 8/8 Channel
31	Computer connectivity	-	Please Specify
32	Hopper loader cum drier	-	Specify for suitable capacity
33	Essential/Standard spares	-	Specify (Standard Tool Kit, NRV, Thermocouple, Band Heater, Short/Extended Nozzle, SSR, Proximity Switch, Limit Switch, Mould Clamps, T-Nut and Studs, Etc.,)
34	MTC (Oil Type)	-	Please Specify
35	Safety	-	Specify the Special safety provisions
37	Motor / Pump Type	-	Servo

38	Motor Load	Kw	Please Specify
39	Total Connected Load	Kw	Please Specify
40	Training		One day Training should be provided after installation.
41	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - EXTRUDER RECYCLING MACHINE			
Sr.No	Items	Units	Specification
1	Screw Dia	mm	70 - 80
2	L/D Ratio	--	Please Specify
3	Materials	--	Most of the thermoplastics
4	Output	Kg/hr	70-100
5	Temp.	°C	Upto 400
6	Feeding system	--	Suitable Main & Side Feeding systems
7	Gear Box	-	Helical gear box with inbuilt thrust bearing
8	Downstream equipment's	-	Please Specify
9	Air Blower Dryer (Preferred)	-	Air Blower Dryer required for drying strands before paletizing
10	Strand die	-	Specify number of strands
11	Stainless Steel Cooling Tank	-	Please Specify
12	Strand Pelletizer (Synchronized cutter to be Incorporated for Strand.)	-	Please Specify
13	Screen Changer / Filter	-	Hydraulically operated screen / filter changer
14	Standard Accessories	-	Please Specify
15	Mixing elements & others	-	Please Specify
16	Spares	-	Please Specify
17	Control- Microprocessor type	-	Microprocessor With display of Screw Torque & die Head Melt Pressure Please specify
18	No. of Screw Extruder	-	Single Screw Extruder
19	Total Connected Load	Kw	Please Specify
20	Training		One day Training should be provided after installation.
21	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - AUTOMATIC THERMOFORMING MACHINE			
Sr.No.	Items	Units	Specification
1	Forming Area (Min.)	mm	550 x 300 or above
2	Forming Depth / Draw	mm	Please specify
3	Max. Sheet Width	mm	Please specify
4	Sheet Thickness (Min. –Max.)	mm	Please specify
5	Top heating	kW	Please specify
6	Bottom heating	kW	Please specify
7	Material to be formed	-	PS/ PP/ PE /PET/PVC etc.
8	Plug assisted attachment	-	Please specify
9	Vacuum Forming / Pressure Forming.	-	Please specify
10	Sheet roll feeding/ Disposal after forming system Attachment	-	Please specify
11	<b>Mould (Mandatory)</b>	--	Suitable Mould in Alluminium alloy for this machine <b>Refer Annexure 1.</b>
a	Thermoforming Plate	-	
b	Thermoforming Glass (250 ml)	-	
11	Safety	-	Appropriate safety features to be provided
12	Other Features	-	Please specify
13	Essential Spares- Demonstration, Multi cavity mould for products like	-	Please specify
14	Compressor		Please specify
15	Total Connected Load	Kw	Please Specify
16	Training		One day Training should be provided after installation.
17	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

E-Tender No.: CIPET/KRB/MACHINE&EQP/2020-21/**01**

**Name of Equipment:** AUTOMATIC THERMOFORMING MACHINE

**Description:** Sample image of product for Mould.



Standard Size

**a. Thermoforming Plate**



**b. Thermoforming Glass (250 ml)**

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - HYDRAULIC COMPRESSION MOULDING MACHINE 30-40 TONS			
Sr.No.	Items	Units	Specification
1	Capacity/Capability	Ton	30 -40 Tons, For processing Thermoset Plastics like PF, UF, MF,SMC/DMC etc.,
2	Platen size	mm	Min. 300 x 300
3	Day Light	mm	Min. 400
4	Heating system for platen and mould		Please Specify
5	Maximum Working Temperature	° C	upto 350
6	Working Pressure	bar	Please Specify
7	Control System		Microprocessor/PLC Controls/Computer Integrated control
8	<b>Mould (Mandatory)</b>	--	Suitable Mould with chrome plating for this machine <b>Refer Annexure 1.</b>
a	Cup 150 ml (Melamine Material)		
b	Round Plate (Melamine Material)		
9	Safety	-	Appropriate safety features to be provided
10	Essential Spares	--	Please Specify
11	Total Connected Load	Kw	Please Specify
12	Training		One day Training should be provided after installation.
13	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

E-Tender No.: CIPET/KRB/MACHINE&EQP/2020-21/01

**Name of Equipment:** HYDRAULIC COMPRESSION MOULDING MACHINE 30-40 TONS

**Description:** Sample image of product for Mould.



**a. Cup 150 ml (Melamine Material)**



**b. Round plate (Melamine Material)**

**CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA**

Technical Specification - AGGLOMERATOR			
Sr.No.	Items	Units	Specification
1	Drum Diameter	mm	Please specify
2	Drum material	-	SS material
3	Capacity	Kg	60-100
4	Stationary blades	no.	Please specify
5	Rotating blades	no.	Please specify
6	Standard accessories	-	Please specify
7	Pneumatic operated Lid	-	Please specify
8	Water cooled bearing bed	-	Please specify
9	Nitrided blades	-	Please specify
10	Main motor	kw	Please specify
11	Total Connected Load	Kw	Please specify
12	Training		One day Training should be provided after installation.
13	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.



# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - HOPPER DRIER WITH AUTOMATIC LOADER UNIT			
Sr.No	Items	Units	Specification
1	Drying Bin Volume	Ltr	75-120
2	Air Volume	m3/hr	80-120
3	Temperature range	°C	60-150
4	Standard accessories	-	Please specify and quote
5	Accurate digital readout		Accurate digital readout of process temperature against set point $\pm$ 1 °C
6	Connected load	KW	Please specify and quote
7	Dimensions	-	Please specify and quote
8	Control	-	Microprocessor control
	<b>Loader Specification</b>		
9	Storage volume	Ltr	Please specify and quote
10	Connected load	KW	Please specify and quote
11	Material Throughput	kg/hr	Please specify and quote
12	Safety	-	Appropriate safety features to be provided, Alarm etc
13	Standard accessories	-	Please Specify & Quote
14	Total Connected Load	Kw	Please Specify
15	Training		One day Training should be provided after installation.
16	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification -PET PREFORM STRETCH BLOW MOLDING MACHINE			
Sr.No.	Items	Units	Specification
1	Type	-	Semi Automatic / Fully Automatic
2	Container Blowing Capacity	ml	100 ml to 5000 ml
3	Preform Neck Diameter	mm	up to 83
4	Product Diameter	mm	up to 220
5	Production Capacity ( up to 1000ml)	Piece/Hr	700 - 1000
6	Production Capacity ( above 1000ml)	Piece/Hr	300 - 400
7	Compressed Air Requirement	Bar(kg.)	20 to 30
8	Preform Heater Type	-	IR Heater
9	Clamping Force	KN	20-30
10	Mould Opening Stroke	mm	220 - 240
11	Platen Size	mm	Min. 350 x 450
12	Max. Mold Thickness	mm	280 - 350
13	Preform neck sealing cup & adapters required for blowing different dia. Preforms (Standard Dia.)	mm	28, 46, 83(one sample), Further more will be required as per requirement.
14	Chiller (Mandatory)	-	As per machine requirement
15	Other Accessories	---	Required
16	Essential Spares	---	Required
17	Mould(Mandatory)		
a	200 ml	--	Moulds suitable for this machine Refer Annexure-1. Mould Material - HE -330 , Aluminium Alloy or Equivalent.
b	1000 ml	--	
c	2000ml	--	
18	Total Connected Load	KW	12 or Above
19	Training		One day Training should be provided after installation.
20	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Compression Molding Press for specimen preparation for thermoplastics (30T)			
Sr.No.	Items	Units	Specification
1	Capacity	Ton	30 T
2	Temperature	°C	Upto 300°C (Individual microprocessor based calibrated digital temperature controller for both plates)
3	Power	Volts	440 Volts, 3 Phase A.C. supply
4	Platen Movement	-	Hydraulic systems (Up Strokes)
5	Accessories/Spares	-	Two number of digital timers for curing & cooling cycle, heating & cooling system in platens.
6	Press	-	Press without molding die.
7	Working area (LXW)	mm	Min. 250 X 250
8	Plate dimension (LXW)	mm	Min. 300 X 300
9	Daylight opening	mm	Min. 195
10	Press force	Bar	Up to 150
11	Hydraulic pressure	Bar	Up to 150
12	Heating power	KW	1.5
13	Micro processor		Comprehensive user friendly easy to operate and handling microprocessor for complete cycle.
14	Power Cabinet		3 – Phase + neutral + earth – 440 v AC
15	Water Supply	Inch	Provision for ½ inch external hose connection for cooling
16	Test Standard	-	IS 7328, & other relevant standards
17	Mould for making Thermoplastics Sheets	-	<p>a) Mould Material: P20 or equivalent.</p> <p>b) Size of moulded Plastic sheets should be as per the following specifications: i) Length x Width- 25cm x 25cm (min) ii) Thickness of sheet - 2.00mm, 3.00mm &amp; 4.00mm</p> <p>c) Cavity should be chrome plated</p>
18	Training		One day Training should be provided after installation.
19	Scope of supply		<p>Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid.</p> <p>Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.</p>

## CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Melting Point Apparatus (Digital Display)			
Sr.No	Items	Units	Specification
1	Temperature Range	°C	Ambient temperature to 400°C
2	Temperature Accuracy	°C	±0.5°C at 20°C; ±2.5°C at 400°C
3	Temperature Rate to Fast Temperature Set	°C	0.1°C to 20°C per minute
4	Digital Display/ Resolution	°C	4 digit LED/0.1°C
5	Sample Carrier		Glass
6	Training		One day Training should be provided after installation.
7	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Melt Flow Index (MFI)			
Sr.No.	Items	Units	Specification
1	Scope Of Machine		Determination of flow properties of polymer powders & pellets using ISO 1133 (1991) and ASTM D1238, Methods A, B & C and other equivalent international standards.
2	Performance Characteristics Compliance Standards		System should meet ASTM D1238, ISO 1133-1-2, DIN 53735, BS 2782 and IS 2530
3	Temperature Range	°C	50°C to 400°C
4	Temperature Display Resolution	°C	±0.1°C
5	Thermal Stability	°C	±0.2°C
6	Thermal Fuse Protection		MVR with up to 40 data point acquisition for a single test (with encoder)
7	Barrel Cylinder		Hardened Nitride Steel
8	Display		On-board LCD display with alphaneumeric keypad for methods setting and visualisation of results
9	Digital Encoder Accuracy & Lifting Device		Should be equipped with high accuracy encoder and motorized lifting device to allow precise and exact positioning of the lifting device for the masses.
10	Knife		Automatic cutting device
11	Masses	Kg	1.2, 2.16, 5, 10, 21.6 kg
12	Nozzle		Standard Nozzle as per ISO 1133/ ASTM D1238. Diameter 2.095 mm, Length 8mm, Tungsten Carbide; should be supplied with dimensional conformity certificate
13	Accessories		Cleaning Tools & cleaning cream, Go-No-Go gauges for dies and piston and die plug
14	CRM Materials		CRM with NIST traceable certificate
15	Software		Windows based
16	Die		Die According to ASTM D1238 method C ( Half Die), for high flow rate polyolefins, Dia 1.048mm, Length 4mm - made of Tungsten Carbide; should be supplied with dimensional conformity certificate.
17	Recommended Spare		Spare Standard Die/Nozzle and Piston, Fuses and Thermal Probe
18	The Equipment Should Be Supplied With All Essential Accessories To Meet The Standard Methods Mentioned Above.		
19	Training		One day Training should be provided after installation.
20	Scope Of Supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Long/ short term Hydrostatic Pressure test apparatus for Pipes			
Sr.No	Items	Units	Specification
1	Test Standard		HDPE, PVC, PPR, Lateral pipes as per IS 4985, IS 4984, IS 12786, IS 14333, IS 14151, IS 15328, IS 15801, EN 921:1994, ASTM D 1785 & other relevant standards
2	i) No. of Stations ii) No of outlets from each station	i) No ii) NO	i) 08 (Minimum) ii) 3 No
3	Unit of pressure	kg/cm <sup>2</sup> , MPa, BAR	kg/cm <sup>2</sup> , MPa, BAR
4	Pressure Range	kg/cm <sup>2</sup>	0.00 to 99.99 kg/cm <sup>2</sup>
5	Pressure Resolution	kg/cm <sup>2</sup>	0.01 kg/cm <sup>2</sup>
6	Resolution of Timer	Hrs	999.9
7	Time Range	Hour & Minute (Both)	0.1 hour/6 minute
8	Hydraulic Circuit		Made from Non corrosive S.S. 304 tubing and fittings
9	Compressed air requirement	Kg/cm <sup>2</sup>	Min. 3.0 kg/cm <sup>2</sup> form compressor unit
10	Pressure Developing System		Through hydro-pneumatic type reciprocating pump
11	No. of Pumps		02 pumps
12	Pressure control system		Hydro-pneumatic pressure regulating device with individual control of station.
13	Power Supply	Volt	230V AC, Single phase, 50Hz
14	Equipment shall be calibrated		NIST traceable/NABL accredited calibration certificates to be supplied
15	Training		One day Training should be provided after installation.
16	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Weighing Balance ( Precision Electronic Balance )			
Sr.No.	Items	Units	Specification
1	Capacity	gm	0 - 220 gm (Min.)
2	Accuracy	gm	0.001 g
3	Display		Digital display
4	Density kit		1.Density kit supply with equipment and direct result of Density (gm/cm <sup>3</sup> ) 2. Cover glass cabinet to avoid outside effect during the weighing.
5	Pan size	mm	100 mm
6	Power supply	Volts	220 volts ,single phase,50 Hz
7	Other		With Print report
8	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Reversion Oil Bath			
Sr.No.	Items	Units	Specification
1	Size (L x W x D)	mm	1000mm X 750mm X 750mm
2	Digital Temperature control panel	0C	0 to 200 °C Least Count: 0.1 °C
3	Stirrer Motor for Uniform Temperature	Hp	1/8 HP
4	12 KW Heating Power	Kw	6 KW X 2 Nos.
5	Powder Coated body with heat insulation		Cotton fibre wool insulation
6	Timer	Min	0 to 999 min
7	Timer Accuracy	Sec	1 Sec
8	Should comply with IS 12235		
9	Training		One day Training should be provided after installation.
10	Scope of supply		<p>Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid.</p> <p>Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.</p>



Technical Specification - Opacity Tester			
Sr.No.	Items	Units	Specification
1	Range		0 to 100% Transparency
2	Display		4 <sup>½</sup> Digit 7 segment LED
3	Resolution		0.01
4	Scale linearity		>0.2% of FSD (0.2 class)
5	Accuracy		0.01%
6	Lamp		12 V 21 W with 15mm screw Cap
7	Power		230+ 10% V, AC 50 HZ single phase, approx. 35W
8	Accessories		One calibrated opacity ref. plate & instruction manual.
9	Optical filter Wavelength	Nm	540 Nm
10	Test Standard		As per IS 4985 & other relevant standards
11	Training		One day Training should be provided after installation.
12	Scope of supply		<p>Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid.</p> <p>Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.</p>

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Haze & Clarity Meter			
Sr.No	Items	Units	Specification
1	Measurement Area Dia	mm	18.0 mm
2	Sample Port	mm	25.4 mm
3	Measurement Range i) Transmittance ii) Haze iii) Clarity		0 to 100% 0 to 100% 0 to 100%
4	Repeatability		± 0.1 units (standard deviation)
5	Reproducibility		± 0.4 units (standard deviation)
6	Geometry		0° / diffuse
7	Spectral Response		CIE luminosity function y
8	Illuminant		ASTM D 1003, ISO 13468 & CIE – D65
9	Memory		5000 Reading
10	Interface serial		LAN, USB 2.0, Addition front USB port for drive
11	Power Supply	Volt	230 V / 50 Hz, 115 V / 60 Hz, 200 VA max.
12	Operating Temperature	°C	10°C to 40 °C (50 to 104 °F)
13	Storage Temperature	°C	0°C to 50 °C (32 to 122 °F)
14	Weight	Kg	Please Specify
15	Training		One day Training should be provided after installation.
16	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Environment Stress Cracking Resistance Test Apparatus (ESCR)			
Sr.No	Items	Units	Specification
1	Material Construction		Inner Body: Stainless Steel (304 Grade) Exterior Body: MS with powder coated double walled with PU Insulation
2	Heating System		Heater with digital temperature controller (PID)
3	Finish		Powder coated Havel Gray & Blue combination finish and bright chrome / Zinc plating for corrosion resistant finish, Water outlet system
4	Bath Size	mm	Specify
5	Testing Capacity		08 no. test sample at a time or more
6	Water Bath Circulation		Through induction motor with stirrer
7	Temperature controller		Microprocessor based PID controller, Resolution of 0.1° C, Accuracy : ±0.5° C
8	Temperature Sensor		PT 100
9	Temperature range	0C	Ambient to 100°C or higher
10	Time Totalizer Range	Hrs	Digital Timer, up to 999.9 Hrs
11	Heating Load	Kw	Upto 3 KW (Min.)
12	Power Supply	Volt	230V AC, 50Hz
13	Safety		High temperature cut-off, Low water level alarm
14	Blanking die for cutting specimen	mm	38±2.5 mm x 13±0.8mm with ejector
15	Nicking Jig of lever arm with dial gauge	mm	0-10 mm
16	Notch depth adjustment	mm	0.30, 0.40, 0.50, 0.65 mm with notch length 19 mm
17	Bending cum transferring device		1 No.
18	Test Tubes (Glass)	mm	32 mm dia and 200 mm length
19	Interchangeable notching blades		Minimum 5 number or more
20	Rubber Corks fit to the glass tubes		Minimum 8 Number or more
21	Standard Accessories		1) Cutting Die, Nicking Jig, Bending cum Transfer Tool, Specimen Holder, Corks, Inter changeable Notching Blades and other necessary items as per requirement. 2) Test Tube & Rubber cork- Minimum 20Nos. 3) Equipments should come with all essential items and spares required for installation & commissioning
22	Equipment should be as per Test Standard		ASTM D1693
23	Training		One day Training should be provided after installation.
24	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Contour Cutter with Templates			
Sr.No.	Items	Units	Specification
1	Template as per		IS (Type A, B & C) & ASTM Standard
2	Speed		Based on AC Variable speed AC Drive, High cutting speed.
3	Operation		Milling performance and easy operation
4	Use		Used for making Dumbbell/Other shape specimen
5	Power Requirement		220 / 230 V AC 50-60 Hz, Single Phase.
6	Test Standard		HDPE- IS 4984, IS 12786, IS 14333, IS 14151, ASTM D 638 & other relevant standards
7	Training		One day Training should be provided after installation.
8	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Izod / Charpy Impact Tester with Notch Cutter			
Sr.No	Items	Units	Specification
1	Machine Design		i) Microprocessor based instrument to automatically calculate and display impact energy absorbed by a specimen. ii) With the proper selection of accessories, machine should perform Izod & Charpy tests in accordance with a) ASTM D256 & ISO 180 (Izod Impact) b) ASTM D6110 & ISO 179 (Charpy Impact)
2	Pendulum		Aerodynamic compound pendulum with facility to increase/decrease pendulum capacity with addition/removal of weights enabling user to change to desired capacity quickly & easily.
3	Display		Should offer simple machine configuration and setting test parameters through display
4	Technical Specifications		i) Basic pendulum capacity: 2.82J, with addition of weights upto 25J or more. (Standard) ii) Drop Height: 0.61m
5	Charpy setup		Should include Charpy striker, anvils, setting gauges & supports as per ASTM D6110 & ISO 179
6	Izod setup		Should include Izod striker, setting gauges & supports as per ASTM D256 & ISO 180
7	Add-on Weights		Various weight sets upto 25J capacity (ISO & ASTM methods)
8	Certification		Calibration/verification certificate issued by UKAS or A2LA or any other international body shall be provided.
9	Notch Cutter		should be able to provide automatic specimen notcher to produce a notch in accordance with ISO 179, ISO 180, ASTM D256 & ASTM D6110.
10	Accessories		Facility for Zero and Sub Zero testing upto -50°C
11	Additional		Transparent Safety Enclosure Is Fitted Around The Pendulum
12	Training		One day Training should be provided after installation.
13	Scope of Supply :		Basic Equipment, Aerodynamic compound pendulum, Weights for pendulum, Izod and Charpy setup, Specimen notch cutter and other additional items required to carry out Izod and Charpy impact test as per the standard requirements. NIST traceable/NABL accredited calibration certificates to be supplied. Wherever applicable calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Tear Tester for Films			
Sr.No.	Items	Units	Specification
1	Capacity	Grams	0-6400 grams
2	Pendulum Range	Grams	400, 800, 1600, 3200, 6400
3	Accuracy		1.0% of pendulum range
4	Calibration Weights		20%, 50% and 90%
5	Measuring Principle		Hi-resolution digital encoder
6	Test Standard		IS 2508, ASTM D 1922
7	Features		1. Automatic specimen notching 2. Mechanical pneumatic clamping avoids sample slippage to ensure repeatable results. 3. Automatic pendulum reset with lifting device. 4. Tearing force Displayed digitally 5. Safety hood protects operator from injury while pendulum is in motion
8	NIST traceable/NABL accredited calibration certificates to be supplied		
9	Training		One day Training should be provided after installation.
10	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

## Technical Specification - Projector & Hot Plate for Carbon Black Dispersion (CBD) for HDPE Pipe Testing

Sr.No.	Items	Units	Specification
1	Display		Digital Controller
2	Temperature Range	°C	Ambient to 200°C
3	Size of Hot plate	Inch	8 inch diameter
4	Microscope Magnification Power		10x & 20x
5	Size of Microscope Screen	Inch	6 inch
6	Power Supply	Volt	Single Phase 220-240V AC, 50Hz
7	Control Method		Digital Control & Hot Plate
8	Test Standard		IS 2508, & other relevant standards
9	Training		One day Training should be provided after installation.
10	Scope of supply		<p>Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid.</p> <p>Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable calibration certificate should be provided.</p>

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Press (Cutting) - 30Tonnes with Dies			
Sr.No.	Items	Units	Specification
1	Specimen Cutting Press		Hydraulic
2	Dumbell Cutting Die		IS:4984, 4985, 14151(Part-I), 12786, 13592
3	Suitable Material To Be cut		Specify
4	Max. Thickness To Be cut (non standard)	mm	Specify
5	Max. Working Area (L x W x H)	mm	Specify
6	Any Other information		Specify
7	Scope of supply		<p>Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid.</p> <p>Bidder should supply complete start up package necessary to prove the machine and provide training.</p>



# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Universal Testing Machine (2.5 T for Training)			
Sr.No.	Items	Units	Specification
1	Max. load capacity	kN	25 kN
2	Load cell	kN	25 kN, 5.0 kN, 1.0 kN, 0.001 kN
3	Load cell accuracy		≤ 0.5 %
4	Test speed	mm/min	0.01 mm/min to 500 mm/min.
5	Speed accuracy		± 0.2%
6	Cross head travel	mm	Min 800 mm
7	Horizontal daylight	mm	Min 400 mm
8	Strain measurement accuracy		0.5% or better
9	Load measured		Tension , Compression, Flexural
10	Tensile Grips		i) - Wedge grips Suitable for above loads Grips suitable for testing of Plastic films (rubber faceted Pneumatic type) ii) - Grips for Rigid Plastics (opening up to min.12mm) iii) - Grips for woven Sacks (up to 70 mm width-As per IS :14887 Latest version)
11	Fixtures		i) Flexural fixture complying to ASTM D 790 ii) Compressive Fixture complying to ASTM D 695 iii) Shear fixture complying to ASTM D 732 iv) Fixture complying to IS 4984-2016 (Plastics Butt Fusion Joints Test)
12	Extensometer	mm	i) Ready to connect long travel ii) Range 800 mm iii) Resolution : 0.1 mm
13	Applicable standards and Conforming to		ISO/R-527, ASTM D 638, 695, 790, 882, 412, 3039 and Equivalent standards
14	Power		230 Volt, 50Hz
15	Other Information		The machine is supposed to carryout testing on various type of plastic specimens and product samples as per IS and ASTM Standards as mention above. The sample involves FRP sheets, Plastic Pipe cut Pieces, Moulded Specimens of commodity, Engineering Plastics as per different standards.
16	Operating system &Software		Suitable for all functions such as maximum Load, strain, modulus etc. Necessary software Computer & Printer should be provided. 24-bit resolution card with data acquisition rate of minimum 500 Hz simultaneously on load, extension, and strain channels.
17	Calibration certificate		Calibration certificate for load cells and extensometer traceable to National / International Standards should be provided
18	Scope of supply		Bidder should submit complete scope of supply (Machine, standard accessories, Optional Accessories etc with make model) Bidder should supply complete start up package including material necessary to prove the machine and provide training.
19	INSTALLATION, COMMISSIONING AND TRAINING		
a	Installation and commissioning requirements		Bidder should submit the preinstallation requirements such as space etc., . State clearly the specifications of electrical requirement. Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis.
b	Training and documentation		<p>Minimum of 5 days training for five persons which includes basic &amp; advanced level training. Training content and plan to be submitted. Training faculty must have adequate experience in this field.</p> <p>The vendor should supply the necessary manuals such as:</p> <ul style="list-style-type: none"> <li>i) Software instruction</li> <li>ii) Maintenance and trouble manual</li> <li>iii) Training</li> <li>iv) Installation and Commissioning</li> <li>v) Handling of accessories</li> <li>vi) Software key (if any)</li> <li>Vii) Software CDs</li> </ul> <p>NIST traceable/NABL accredited calibration certificates to be supplied</p>

## CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Melting Point Apparatus (Hot Stage)			
Sr.No	Items	Units	Specification
1	Temp Range (Deg. Centigrade)	° C	Ambient to 350° C
2	Operation Grade		Automatic
3	Control System		PLC control
4	Resolution	°C	1°C or better
5	Other required accessories should be provided		Specify
6	Training		One day Training should be provided after installation.
7	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Burst Tester for Films			
Sr.No.	Items	Units	Specification
1	Type		Mullen type of hydro-static digital burst strength tester For film, Aluminum foil, Fabric Specifications: Machine designed and working principal as per ASTM D-3786
2	Pressure range	Kg/cm2	60 Kg/cm2
2	Least Count	Kg/cm2	0.05 kg/cm2
3	Display		Digital
4	Rate of Fluid Displacement	cc/minute	100 cc/minute
5	Test fluid		Water
6	Motor	Hp	1/2 HP single Phase
7	Peak Hold Facility		Yes
8	Safety Switch		Yes
9	Features		Digital Indication of readings
			Equipment should be completely Microprocessor based
			Tare facility should be incorporated
			Peak hold facility for keeping the maximum value in the memory
			Bright LED display
			Features touch control
			Single push button control
			Memory to hold upto 10 tests
			Strong gripping clamp
			Grooved structure for test specimen holder to avoid slippage and intact holding of specimen
			No slippage in case of specimen tightened uniformly using operating wheel
10	Training		One day Training should be provided after installation.
11	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

## Technical Specification - Drop Tester for PET Bottle

Sr.No	Items	Units	Specification
1	Drop Height	mtr	Adjustable b/w 0.5 mtr. to 2.0 mtr.
2	Drop Weight	Kg	Up to 25 kg (min)
3	Operating Systems		Manual flap opening with liver operation / Automatic
4	Platform Size		Please Specify
5	Lifting		Manual with supportive pulley & wire rope winch systems
6	Operations		Manual Flaps Opening with liver / / Automatic
7	Dropping edges and corners		By Fixing Support from upper side & from sides of flaps
8	Constructed of Drop Tester		The drop tester is constructed sturdy MS with Powder coated/painted & plated. Its single column design with operating from different heights
9	Device to be used for Drop Test for Containers, Filled Pouches and should full fill the requirement of IS 2798-1998 and IS 7394-1984.		Specify
10	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Viscosity Thermostatic Bath			
Sr.No.	Items	Units	Specification
1	Material of inner body		Stainless Steel - 304
2	Material of outer body		Stainless Steel - 304
3	Insulation		<ul style="list-style-type: none"> <li>• Thermo insulation bath</li> <li>• Inspection glass on the front side</li> </ul>
4	Range	0C	0 - 99.99 °C
5	Least count	0C	0.01 °C
6	Power supply	Volt	230 V AC. 3/13 amps, with 3 pin socket
7	Heater	wat	100 watts and cooling facilities required
8	Other		Stirrer for uniform temperature
9	Size of Bath	mm	L-300mm x W-300mm x H-350 mm (Minimum)
10	Training		One day Training should be provided after installation.
11	Scope of supply		<p>Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid.</p> <p>Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable, calibration certificate should be provided.</p>

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Climatic Chamber			
Sr.No	Items	Units	Specification
1	Width (mm)	mm	Min. 400
2	Height (mm)	mm	Min. 400
3	Depth (mm)	mm	Min. 330
4	Interior volume (l)	liter	Min. 53 or specify
5	Load per shelf (kg)	kg	Min. 15
6	Permitted total load (kg)	kg	Min. 60
Temperature data			
7	Temperature range (°C)	°C	- 40 to 180
8	Temperature fluctuation (± K )	Kelvin	0,1 - 0,5
9	Recovery time after door was open	Sec	30 sec
10	at -10 °C (min.)		5
11	at 70 °C (min.)		1
12	at 150 °C (min.)		5
13	Mean warm-up rate acc. to fa		4,6
14	Mean cooling rate acc. factory standard (°C/min.)	°C/min.	4,1
15	Heat compensation, max. (W)	Watt	500
Humidity data			
16	Humidity range (%)	%	0-99
Electrical data			
17	IP protection class acc. To EN 50529		IP 20
18	Temperature and Humidity should be microprocessor based Programmable		Specify
19	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training. Wherever applicable calibration certificate should be provided.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Coefficient Of Friction			
Sr.No.	Items	Units	Specification
1	Capacity	Kg	Up to 9.999 kg.
2	Direct display		Static and kinetic friction values
3	Speed	mm/ min	150mm/minute.
4	Weight of sledge	gram	200 grams.
5	Accessories		Three nos. of S.S templates
6	Paint		Powder coated.
7	Power		230 Volts, 50Hz, single phase
8	Force Measurement- Through Load Cell		Through Load Cell
9	Force Range	gram	0 - 1000gram
10	As per		ASTM D – 1894
11	Training		One day Training should be provided after installation.
12	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Density Gradient Column			
Sr.No	Items	Units	Specification
1	Calculation of Data		Automatic density
2	Calibration system		Automatic
3	Display		LCD
4	Resolution	g/ml	0.0001 g/ml
5	Accuracy	g/ml	0.0001 g/ml , Backlight
6	Pumping System		Variable speed pumped filling
7	Flasks		Twin conical filling Flasks
8	Stirrer		Automatic magnetic
9	Mechanism		Automatic sweep
10	Baskets		Stainless steel sweep
11	Microscope		7x optical or better
12	Temperature Control	°C	Digital temperature control to 0.1°C
13	Output		RS232 or Latest
14	Coil		Cooling coil
15	Power Supply	volt	110v 60hz and 240v 50Hz
16	Product		User manual
17	Conforms Of IS Method		ISO1183 & ASTM D1505
18	Printer		Thermal Printer
19	Unit		Water chiller unit
20	Glass marker floats	g/ml	0.7g/ml up to 2.2g/ml
21	Training		One day Training should be provided after installation.
22	Scope of supply		Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid. Bidder should supply complete start up package necessary to prove the machine and provide training.



# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Pantograph Engraving Machine				
Sr.No.	Items	Units	Specification	
1	Capacity			
1.1	Clamping area (Minimum)	(mm)	500x300	
1.2	Drive motor (Minimum)	HP	0.5 or better	
1.3	Speed range (Minimum)	rpm	6000-18000	
1.4	No of speeds		5 or more	
1.5	Cross travels		3 or better	
1.6	Vertical travels		6 or better	
1.7	Spindle hole taper	(degree)	20 or better	
1.8	Max collet capacity	(mm)	10	
1.9	Pantograph ratio		1:1-1:50 (18 or more range)	
2	Work table			
2.1	Longitudinal travels (Minimum)	(mm)	300 or better	
2.2	Cross travel (Minimum)	(mm)	200 or better	
2.3	Vertical distance		300 or better	
2.4	T slots on table		3 or better	
3	Essential Accessories			
3.1	Machine Lamp	Set of accessories suitable to the machine.		
3.2	Tools Kit			
3.3	One set of manual			
3.4	Clamping Kit			
3.5	Anti-vibration pad			
3.6	Templates			
4	Any Others Accessories	Bidder to specify and quote if any other accessories available /required for smooth running of the machine.		
5	Terms & Conditions	Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is centrally funded education institution. A Satisfactory Performance certificate from two institutute/firm (preferbly government) shall be provided for this machine. Bidder should submit complete contact details with phone no.		
		Equipment should be CE certified.		
6	Training	One day Training should be provided after installation.		
7	Scope of supply	Bidder should submit complete scope of supply (Machine, Manuals, standard accessories, Optional accessories etc with make model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine and provide training.		

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

## Technical Specification - CNC Lathe – I

Sr.No.	Items	Units	Specification
<b>1</b>	<b>Capacity</b>		
1.1	Swing over bed (Minimum)	mm	450
1.2	Swing over carriage (Minimum)	mm	200
1.3	Max. turning diameter (Minimum)	mm	250
1.4	Max. turning length (Minimum)	mm	400
1.5	Distance between centres (Minimum)	mm	500
<b>2</b>	<b>Travel</b>		
2.1	X-Axis Travel (Cross) (Minimum)	mm	150
2.2	Z-Axis Travel (Longitudinal) (Minimum)	mm	400
<b>3</b>	<b>Main Spindle</b>		
3.1	Spindle motor Power (Minimum)	KW	7.5 or better
3.2	Max. Speed (Minimum)	rpm	4000 or better
3.3	Spindle Bore (Minimum)	mm	50
3.4	Spindle Nose (Minimum)		A2-6
<b>4</b>	<b>Feed Rate</b>		
4.1	Rapid Traverse X axis (Minimum)	mts./ min	20 or better
4.2	Rapid Traverse Z axis (Minimum)	mts./ min	20 or better
4.3	Feed Rate (Minimum)	mm/ min	5000 or better
<b>5</b>	<b>Turret</b>		
5.1	No. of station (Minimum)	Nos.	8 or better
5.2	Tool shank size	mm	20x20 or better
5.3	Boring bar dia.	mm	32 or better
5.4	Turret indexing		Bi Directional
<b>6</b>	<b>Tailstock</b>		
6.1	Quill dia (Minimum)	mm	60
6.2	Quill stroke (Minimum)	mm	100
6.3	Quill taper	-	MT4 or better
<b>7</b>	<b>CNC System</b>		
7.1	Controller		Fanuc / Siemens /or equivalent (Latest with complete module) with the screen size of 14" or more with touch screen technology, app based which leads to a smart paperless shop floor management and monitoring.
7.2	Part Program Storage & Data Transfer	GB	Capable to store large CAM programs for continuous running (Minimum 2 GB) with USB & Memory Card Slot.
7.3	Programming Functions with editor		Complete module.
<b>8</b>	<b>Accuracy</b>		
8.1	Positioning uncertainty	µm	5
8.2	Overall Axis Repeatability (X,Z)	µm	5
8.3	Part Surface Finish	Ra	5
8.4	Roundness	µm	5
8.5	Turret Indexing Repeatability	µm	5

<b>9</b>	<b>Essential Accessories</b>		
9.1	Programmable Tailstock with sleeves	one No.	
9.2	Automatic Tool setter	one No.	
9.3	Hydraulic 3 Jaw Chuck	Max. turning diameter of the quoted machine	
9.4	Hydraulic 4 Jaw Chuck	Max. turning diameter of the quoted machine	
9.5	Soft Jaws	two sets	
9.6	Drill Chuck	25 mm	
9.7	Hydraulic Collet chuck with set of collets	Size: 26 mm; set of collets upto 25 mm	
9.8	Set of standard Cutting Tools	a. Tools with holder for replaceable inserts (for Facing,Turning, boring, threading, grooving, parting, drilling etc. b. Drills- Centre Drill and Drilling Tools from 1to 20 mm dia.	
9.9	Coolant System	Bidder to specify and quote suitable for the machine.	
9.10	Start up Tool kit	Bidder to specify and quote suitable for the machine.	
9.11	Foot switch		
9.12	Work light		
9.13	Centralized lub. System		
9.14	Set of Rubber mounts		
9.15	Voltage Stabilizer		
9.16	Ultra Isolation transformer		
9.17	Others	Ethernet, USB ports, RS-232C Communication Ports, Set of manual (or) CD.	
10	Any Others Accessories	Bidder to specify and quote if any other accessories available/required for smooth running of the machine.	
11	Terms & Conditions	Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is education institutions centrally funded institution. A Satisfactory Performance certificate from two institutions to be provided for eligibility. Bidder should submit complete contact details. Equipment should be CE certified.	
12	Training	Two days Training should be provided after installation.	
13	Scope of supply	Bidder should submit complete scope of supply (Machine, Manual, standard accessories, Optional Acessories etc with make model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine and provide training.	

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - CNC Lathe – II			
Sr.No.	Items	Units	Specification
<b>1</b>	<b>Capacity</b>		
1.1	Swing over bed (Minimum)	mm	500
1.2	Swing over carriage (Minimum)	mm	300
1.3	Max. turning diameter (Minimum)	mm	400
1.4	Max. turning length (Minimum)	mm	1000
1.5	Distance between centres (Minimum)	mm	1400
<b>2</b>	<b>Travel</b>		
2.1	X-Axis Travel (Cross) (Minimum)	mm	200
2.2	Z-Axis Travel (Longitudinal) (Minimum)	mm	1400
<b>3</b>	<b>Main Spindle</b>		
3.1	Spindle motor Power (Minimum)	KW	20 or better
3.2	Max. Speed (Minimum)	rpm	3000 or better
3.3	Spindle Bore (Minimum)	mm	Bidder to specify
3.4	Spindle Nose		A2-8 or better
<b>4</b>	<b>Feed Rate</b>		
4.1	Rapid Traverse X axis (Minimum)	mts./min	15 or better
4.2	Rapid Traverse Z axis (Minimum)	mts./min	15 or better
4.3	Feed Rate (Minimum)	mm/min	4000 or better
<b>5</b>	<b>Turret</b>		
5.1	No. of station	Nos.	8 or better
5.2	Tool shank size	mm	25x25 or better
5.3	Boring bar dia.	mm	40 or better
5.4	Turret indexing		Bi Directional
<b>6</b>	<b>Tailstock</b>		
6.1	Quill dia (Minimum)	mm	80
6.2	Quill stroke (Minimum)	mm	Bidder to specify
6.3	Quill taper	-	MT5 or better
<b>7</b>	<b>CNC System</b>		
7.1	Controller		Fanuc / Siemens /or equivalent (Latest with complete module) with the screen size of 14" or more with touch screen technology, app based which leads to a smart paperless shop floor management and monitoring.
7.2	Part Program Storage & Data Transfer	GB	Capable to store large CAM programs for continuous running (Minimum 2 GB) with USB & Memory Card Slot
7.3	Programming Functions with editor		Complete module

<b>8</b>	<b>Accuracy</b>		
8.1	Positioning uncertainty	µm	5
8.2	Overall Axis Repeatability (X,Z)	µm	5
8.3	Part Surface Finish	Ra	5
8.4	Roundness	µm	5
8.5	Turret Indexing Repeatability	µm	5
<b>9</b>	<b>Essential Accessories</b>		
9.1	Programmable Tailstock with sleeves	One No.	
9.2	Automatic Tool setter	One No.	
9.3	Hydraulic 3 Jaw Chuck	Max. turning diameter of the quoted machine	
9.4	Hydraulic 4 Jaw Chuck	Max. turning diameter of the quoted machine	
9.5	Soft Jaws	Two sets	
9.6	Drill Chuck	25 mm	
9.7	Hydraulic Collet chuck with set of collets	Size: 26 mm; set of collets upto 25 mm	
9.8	Set of standard Cutting Tools	a. Tools with holder for replaceable inserts (for Facing,Turning, boring, threading, grooving, parting, drilling etc. b. Drills- Centre Drill and Drilling Tools from 1to 20 mm dia.	
9.9	Coolant System	Bidder to specify and quote suitable for the machine.	
9.10	Start up Tool kit		
9.11	Foot switch		
9.12	Work light		
9.13	Centralized lub. System		
9.14	Set of Rubber mounts		
9.15	Voltage Stabilizer		
9.16	Ultra Isolation transformer		
9.17	Others	Ethernet, USB ports, RS-232C Communication Ports, Set of manual (or) CD.	
10	Any Others Accessories	Bidder to specify and quote if any other accessories available/required for smooth running of the machine.	
11	Terms & Conditions	Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is education institutions centrally funded institution. A Satisfactory Performance certificate from two institutions to be provided for eligibility. Bidder should submit complete contact details. Equipment should be CE certified.	
12	Training	Two days Training should be provided after installation.	
13	Scope of supply	Bidder should submit complete scope of supply (Machine, Manual, standard Accessories, Optional Accessories etc with make model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine and provide training.	

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

## Technical Specification - CNC Milling – I

Sr.No.	Items	Units	Specification
1	Axis Travel		
1.1	X-Axis (Minimum)	(mm)	400
1.2	Y-Axis (Minimum)	(mm)	300
1.3	Z-Axis (Minimum)	(mm)	250
2	Table		
2.1	Length (Minimum)	(mm)	800
2.2	Width (Minimum)	(mm)	300
2.3	T-Slot Width (Minimum)	(mm)	14
2.4	Number of Std T-Slots	nos.	3 or more
3	Feed		
3.1	Rapid Feed (X, Y,Z Axes)	(m/min)	15 or better
3.2	Max. Cutting Feed (X, Y,Z Axes)	(m/min)	12 or better
4	Spindle		
4.1	Rating	(KW)	Bidder to specify
4.2	Max. Speed	(rpm)	6000 or better
4.3	Taper		BT40
5	Accuracy		
5.1	Positioning	(µm)	10 or better
5.2	Repeatability	(µm)	5 or better
6	Automatic Tool Changer		
6.1	Magazine capacity (Nos)		10 or better
6.2	Tool select by shortest & random select		Bi-Directional
6.3	Max. tool diameter	(mm)	80 or better
6.4	ATC Type - ChainType OR Drum Type		Bidder to specify
7	Control System		
7.1	Controller	Fanuc / Siemens /or equivalent (Latest with complete module) with the screen size of 14" or more with touch screen technology, app based which leads to a smart paperless shop floor management and monitoring.	
7.2	Part Program Storage(GB) & Data Transfer	Capable to store large CAM programs for continous running (Minimum 4 GB) with USB & Memory Card Slot.	
7.3	Programming Functions with editor	Complete Module with technical calculator for power and torque requirements , with dxf file import facility, 3D simulation .	
8	Essential Accessories		
8.1	Servo stabilizer	Bidder to specify and quote suitable for the machine.	
8.2	Ultra Isolation transformer		
8.3	Air Compressor with drier and multi dry filter		
8.4	Automatic centralized lubrication system		
8.5	Touch Probe	Bidder to specify and quote Branded quality(Renishaw /Blum) Touch Probe.	
8.6	Machine protection	Monitoring vibration during machining to protect machine and spindle failure. User authorisation to the control system and the machine. Safety during power failure and Panel cooler for electrical cabinet. Door interlock for safety.	
8.7	Industry 4.0 features leads to smart machine	Live status of important component of the machine in operation, internet based remote diagnosis of the machine like fault on the machine.	

8.8	Operation hardware	Electronic handwheel, Flushing gun for internal cleaning, Coolant tank with chip conveyor.
8.9	Tool holding devices	Bidder to specify and quote Set of suitable Cutting Tool holders
		ER 25 collet chuck -1 No.
		ER 25 collets Dia 3 to Dia 14 in steps of 1mm - 1 each
		ER 32 collet chuck - 1 No.
		ER 32 collets Dia 10 to Dia 20 in steps of 1mm - 1 each
		ER 40 collet chuck -1 No.
		ER 40 collets Dia 20 to Dia 25 in steps of 1mm - 1 each
		ER 25 Tap collets with square drive for M8 and M10 taps- 1 each
		ER 32 Tap collet with square drive for M12 tap-1 each
		Side lock adaptors Dia 16, 20, 25 & 32 -1 each
		Keyless drill chuck 0-13mm
		Holder (adapter) for 40 mm Face mill - 2 No
		Holder (adapter) for 80 mm Face mill - 1 No
		Holder (adapter) for 125 mm Face mill - 1 No
		Holder (adapter) for 50 mm Bull - 1 No
		Tool locking device-2 No.
		Pull stud- 30 no's
		Tool Zero Setter
		Angle Head
8.10	Cutting Tools	Bidder to specify and quote Set of Cutting tools & Make/Brand.
		Face mill cutter (with replaceable inserts 20 nos.) - Dia 80 mm.
		Bull nose cutter (with replaceable inserts 20 nos)- Dia 50 mm .
		End Mill cutter (with replaceable inserts 20 nos)- Dia 32 mm.
		Bull nose cutter (with replaceable inserts 20 nos)- Dia 25 mm .
		Endmill cutter (with replaceable inserts 20 nos)- Dia 20 mm .
		Endmill cutter (with replaceable inserts 20 nos)- Dia 16 mm.
		Carbide End Mill cutter (each 5)- Dia. 3, 4, 5, 6, 8, 10, 12, 16 mm.
		Carbide Ball End Mill cutter (each 5)- Dia. 3, 4, 5, 6, 8, 10,12, 16 mm .
		M8, M10,M12 HSS Tap with suitable Carbide Drills - 2 Sets .
		HSS Drills ( one set) - Dia. 1 to 20 mm .
		Centre Drill (Carbide & HSS) - each 3 Diff. Sizes .
		Finish boring kit dia 10 to 40- 1 set.
8.11	Clamping Kit	Clamp set Precision Hydraulic Vise with jaw opening of 275 mm (or Above) and clamping force 60 KN (or Above) - 1 No 3 Jaw chuck - 300 mm dia - 1 no.
8.12	Others	Internet/ USB ports/Memory Card Slot/Wifi Connectivity (Bidders to Specify).
8.13	Software & Workstation	CAM software with post processor suitable for the machine to be quoted separately with workstation.
9	Any other accessories if available for better utilization	Bidder to specify and quote if any other accessories available /required for smooth running and better utilization of the machine.
10	Terms & Conditions	Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is education institutions centrally funded institution. A Satisfactory Performance certificate from two institutions to be provided for eligibility. Bidder should submit complete contact details.
		Equipment should be CE certified.
11	Training	Two days Training should be provided after installation.
12	Scope of supply	Bidder should submit complete scope of supply (Machine, standard accessories, Optional Accessories etc with make model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - CNC Milling – II			
Sr.No.	Items	Units	Specification
1	Axis Travel		
1.1	X-Axis (Minimum)	(mm)	800
1.2	Y-Axis (Minimum)	(mm)	600
1.3	Z-Axis (Minimum)	(mm)	500
2	Table		
2.1	Length (Minimum)	(mm)	1000
2.2	Width (Minimum)	(mm)	600
2.3	T-Slot Width (Minimum)	(mm)	16
2.4	Number of Std T-Slots	nos	5 or more
3	Feed		
3.1	Rapid Feed (X, Y,Z Axes)	(m/min)	20 or better
3.2	Max. Cutting Feed (X, Y, Z axes)	(m/min)	15 or better
4	Spindle		
4.1	Rating	(KW)	Bidder to specify
4.2	Max. Speed	(rpm)	6000 or better
4.3	Taper		BT40
5	Accuracy		
5.1	Positioning	(µm)	10 or better
5.2	Repeatability	(µm)	5 or better
6	Automatic Tool Changer		
6.1	Magazine capacity (Nos)		10 or better
6.2	Tool select by shortest & random select		Bi-Directional
6.3	Max. tool diameter	(mm)	80 or better
6.4	ATC Type - ChainType OR Drum Type		Bidder to specify
7	Control System		
7.1	Controller	Fanuc / Siemens /or equivalent (Latest with complete module) with the screen size of 14" or more with touch screen technology, app based which leads to a smart paperless shop floor management and monitoring.	
7.2	Part Program Storage(GB) & Data Transfer	Capable to store large CAM programs for continous running (Minimum 4 GB) with USB & Memory Card Slot.	
7.3	Programming Functions with editor	Complete Module with technical calculator for power and torque requirements , with dxf file import facility, 3D simulation .	
8	Essential Accessories		
8.1	Servo stabilizer	Bidder to specify and quote suitable for the machine	
8.2	Ultra Isolation transformer		
8.3	Air Compressor with drier and multi dry filter		
8.4	Automatic centralized lubrication system		
8.5	Touch Probe	Bidder to specify and quote Branded quality(Renishaw /Blum) Touch Probe.	
8.6	Machine protection	Monitoring vibration during machining to protect machine and spindle failure. User authorisation to the control system and the machine. Safety during power failure and Panel cooler for electrical cabinet. Door interlock for safety.	
8.7	Industry 4.0 features leads to smart machine	Live status of important component of the machine in operation, internet based remote diagnosis of the machine like fault on the machine.	
8.8	Operation hardware	Electronic handwheel, Flushing gun for internal cleaning, Coolant tank with chip conveyor.	
		Bidder to specify and quote Set of suitble Cutting Tool holders.	
		ER 25 collet chuck -1 No.	
		ER 25 collets Dia 3 to Dia 14 in steps of 1mm - 1 each	



8.9	Tool holding devices	ER 32 collet chuck - 1 No.
		ER 32 collets Dia 10 to Dia 20 in steps of 1mm - 1 each
		ER 40 collet chuck -1 No.
		ER 40 collets Dia 20 to Dia 25 in steps of 1mm - 1 each
		ER 25 Tap collets with square drive for M8 and M10 taps- 1 each.
		ER 32 Tap collet with square drive for M12 tap-1 each
		Side lock adaptors Dia 16, 20, 25 & 32 -1 each
		Keyless drill chuck 0-13mm
		Holder (adapter) for 40 mm Face mill - 2 No
		Holder (adapter) for 80 mm Face mill - 1 No
		Holder (adapter) for 125 mm Face mill - 1 No
		Holder (adapter) for 50 mm Bull - 1 No
		Tool locking device-2 No.
		Pull stud- 30 no's
		Tool Zero Setter
		Angle Head (with adjustable angle)
8.10	Cutting Tools	Bidder to specify and quote Set of Cutting tools & Make/Brand
		Face mill cutter (with replaceable inserts 20 nos.) - Dia 80 mm
		Bull nose cutter (with replaceable inserts 20 nos)- Dia 50 mm
		End Mill cutter (with replaceable inserts 20 nos)- Dia 32 mm
		Bull nose cutter (with replaceable inserts 20 nos)- Dia 25 mm
		Endmill cutter (with replaceable inserts 20 nos)- Dia 20 mm
		Endmill cutter (with replaceable inserts 20 nos)- Dia 16 mm
		Carbide End Mill cutter (each 5)- Dia. 3, 4, 5, 6, 8, 10, 12, 16 mm
		Carbide Ball End Mill cutter (each 5)- Dia. 3, 4, 5, 6, 8, 10,12, 16 mm
		M8, M10,M12 HSS Tap with suitable Carbide Drills - 2 Sets
		HSS Drills ( one set) - Dia. 1 to 20 mm
		Centre Drill (Carbide & HSS) - each 3 Diff. Sizes
		Finish boring kit dia 10 to 40- 1 set
8.11	Clamping Kit	Clamp set Precision Hydraulic Vise with jaw opening of 275 mm (or Above) and clamping force 60 KN (or Above) - 1 No 3 Jaw chuck - 300 mm dia - 1 no.
8.12	Others	Internet/ USB ports/Memory Card Slot/Wifi Connectivity (Bidders to Specify).
8.13	Software & Workstation	CAM software with post processor suitable for the machine to be quoted separately with workstation.
9	Any other accessories if available for better utilization	Bidder to specify and quote if any other accessories available /required for smooth running and better utilization of the machine.
10	Terms & Conditions	Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is education institutions centrally funded institution. A Satisfactory Performance certificate from two institutions to be provided for eligibility. Bidder should submit complete contact details.
		Equipment should be CE certified.
11	Training	Two days Training should be provided after installation.
12	Scope of supply	Bidder should submit complete scope of supply (Machine, standard accessories, Optional Accessories etc with make model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine and provide training.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - CNC EDM Machine			
Sr.No	Items	Units	Specification
1	Work Tank Size (X,Y,Z)	mm	X- Min.800, Y- Min.500, Z- Min.250
2	Axis Travel ( X, Y , Z)	mm	X- Min.400, Y- Min.300, Z- Min.300
3	Measurement resolution	µm	5 or better
4	Maximum Job weight	kg	>800
5	Max. electrode weight on automatic chuck	kg	>50 without C axis > 25 with C axis
6	Dielectric Unit		Filtration system - 10µ or better ; Flushing injections
7	Generator		ISPG Integrated or better
8	Max. machining current (Option)	A	60
9	Minimum surface roughness (Ra)	µm	1 or better
10	Control System	Latest with complete module CNC controller (or OEM system) and Capable storage to store large part programs for continuous running.	
11	Essential Aecessories		
11.1	Automatic Tool Changer Linear or Rotary	Bidder should quote and supply OEM/well known branded with make, model and major specification.	
11.2	Rigid Linear Motor (X, Y, Z)		
11.3	Glass Scale Feedback (X, Y, Z		
11.4	Rotary Head		
11.5	C Axis		
11.6	Super finish Module		
11.7	Zero Wear Module		
11.8	Flushing system		
11.9	Filter set		
11.1	Servo voltage stabilizer		
11.1	Ultra Isolation transformer		
11.1	Silent operation Air Compressor with drier		
11.1	Chiller Unit		
11.1	Collet holder with collet set		
11.2	3D probe measuring system		
11.2	electrode holding system kit		
11.2	Remote controller		
11.2	Clamping kit		
11.2	Precision machine vice 4"		
11.20	Ethernet, USB ports, RS- 232C Communication Ports		
11.2	Fire Extinguisher		
11.2	Air gun with pipe		
11.2	Machine lamp		
11.2	Dielectric fluid (400 Litre)		
12	Others	Need to specify and quote if any other accessories required for smooth running of the machine.	
13	Terms & Conditions	The bidder must have supplied machines at other institutes in the past ( a satisfactory performance certificate from those user may be solicited if needed). Bidder should submit complete contact details.	
		Manufacture/Supplier should have sizable installation of or better model worldwide and at least five in India.	
		Equipment should be CE certified.	
14	Training	Four days Training should be provided after installation.	
15	Scope of supply	Bidder should submit complete scope of supply (Machine, standard accessories, Optional Aecessories etc with make model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine and provide training.	

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - CNC Wirecut EDM			
Sr.No	Items	Units	Specification
1	Type		Submerged
2	Dimension of Table (X,Y)	mm	X- min. 800, Y- min. 500
3	Axis Travel (X x Y), U & V Travel	mm	X/U- min. 500, Y/V- min. 500 ,maximum work piece height -300mm.
4	Tapper angle and height	°/mm	Upto 30° / 100 or better
5	Wire Charateristics		Dia. 0.25 mm ; Type of wire guide - Closed diamond type without clearance Protection against electrolytic effects- From roughing through to Finishing.
6	Max. cutting speed	mm2/min	150 or Better
7	Max. weight of the workpiece	Kg	>400
8	Max. Machining current	A	25 or better
9	Min. finishing (Ra)	µm	1 or better
10	Position measurement system/ Measurement resoulution		5 or better
11	Architecture	Std Input & output accessories- LCD 14" or above TFT TouchScreen , Key board , Remote control ; PC multiprocessors; Ethernet, USB ports, RS-232C Communication Ports.	
12	Control System with software	Latest with complete module CNC controller (or OEM system) and Capable storage to store large part programs for continous running. Suitable software for programming and controlling.	
13	Essential Accessories		
13.1	Chiller Unit	Bidder should quote and supply OEM/well known branded with make, model and major specification.	
13.2	Wire chopper		
13.3	Servo stabilizer		
13.4	Ultra Isolation transformer		
13.5	Silent operation Air Compressor with drier		
13.6	Air gun with pipe		
13.7	Holding & Clamping Kit (Such as vice, angle plate, v block, Clamps,Extension clamps, C-clamps, etc.)		
13.8	Consumables	Minimum 10 Spools of coated wire and other necessary consumables.	
13.9	Filters	2 sets of 10 micron filters or better.	
13.10	Workstation	Suitable latest workstation for part programming.	
13.11	Automatic Wire Feed Setup (Manadatory)	-	
14	Others	Bidder to specify and quote if any other accessories available /required for smooth running of the equipment.	
15	Terms & Conditions	The bidder must have supplied machines at other institutes in the past ( a satisfactory performance certificate from those user may be solicited if needed). Bidder should submit complete contact details.	
		Manufacturer of the supplied equipment must be ISO certified.	
		Manufacture/Supplier should have sizable installation of or better model worldwide and at least five in India.	
		Equipment should be CE certified.	
16	Training	Four days Training should be provided after installation.	
17	Scope of supply	Bidder should submit complete scope of supply (Machine, standard acessories, Optional Acessories etc with make model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine and provide training.	

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - CNC Lathe Programing simulator Software for Workstation/Computer		
Sr.No.	Specification	
1	CNC Lathe Programing simulator Software Turning operations for FANUC/ SIEMENS(or) Equivalent controlars with the following features:	Bidder to specify the features of the simulator software.
a	Basic education	
b	Intractive training in programming tool path generation	
c	Machining verification through graphics simulation	
2	<b>General Terms &amp; Conditions:</b>	Bidder to specify the General Terms & Conditions of the simulator software.
a.	Software should be supplied with latest version	
b.	The quote should be supplied with the reference to the module	
c.	The license must be perpetual	
d.	Installation and Trainning will be the responsibility of the supplier	
e.	During the above period of maintenance will be supplied free of cost	
3	<b>Any other Accessories</b>	Bidder to specify and quote if any other accessories available required for smooth running of machines software.
4	<b>Terms &amp; Conditions</b>	<p>Manufacturer/ supplier should have sizable installation of same better model worldwide and at least five in India which is education institutions, centrally funded institutions.</p> <p>A satisfactory performance cerificate from tow institution to be provided for eligibility. Bidder should submit complete contact details.</p> <p>Delivery of Simulator from the date of purchase order.</p>
5	<b>Scope of Supply</b>	Bidder should submit complete scope of supply (Machine software standard accessories, optional accessories, etc. With make, model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine software and provide training.
6	<b>Installation, commissioning and training</b>	
a	Installation and commissiong requirements	Bidder to state the requirements for installation of the machine software. State clearly the specification of electrical requirements if any. Vendor should carry out Installation and commissioning of the machin software and its accessories on a turnkey basis.
b	Training and documentation	<p>Training should be provided during installation. Total training duration shall be of 07 days. Training shall be planned in two phases; basic for 4 days and advanced for 3 days. Training content and plan to be submitted. Training faculty must have adequate experience in this field.</p> <p>The vendor should supply the necessary manuals such as:</p> <p>Software instructions</p> <p>Maintenance and troubleshooting manual</p> <p>Training</p> <p>Installation and Commissioning</p> <p>Handling of accessories</p> <p>Software key (if any)</p> <p>Software CDs, etc.</p>
c	Technical support and service	Manufacturer should have established after sales & service and network in India. The vendor shall have local service and application office and infrastructure to attend by visit within 48 hrs of need. Technical support personnel must have adequate experience in this field. Technical personnel details should be submitted. Name and address of the authorized service center/partner in India along with the certificate of authorization should be attached.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - CNC Milling Programing simulator Software for Workstation/Computer		
Sr.No.	Specification	
1	CNC Programing Simulator Software for Milling operations for FANUC/ SIEMENS(or) Equivalent controlars with the following features:	Bidder to specify the features of the simulator software.
a	Basic education	
b	Intractive training in programming tool path generation	
c	Machining verification through graphics simulation	
2	<b>General Terms &amp; Conditions:</b>	Bidder to specify the General Terms & Conditions of the simulator software.
a.	Software should be supplied with latest version	
b.	The quote should be supplied with the reference to the module	
c.	The license must be perpetual	
d.	Installation and Training will be the responsibility of the supplier	
e.	During the above period of maintenance will be supplied free of cost	
3	<b>Any other Accessories</b>	Bidder to specify and quote if any other accessories available required for smooth running of machines software.
4	<b>Terms &amp; Conditions</b>	Manufacturer/ supplier should have sizable installation of same better model worldwide and at least five in India which is education institutions, centrally funded institutions. A satisfactory performance certificate from two institutions to be provided for eligibility. Bidder should submit complete contact details.
5	<b>Scope of Supply</b>	Bidder should submit complete scope of supply (Machine software standard accessories, optional accessories, etc. With make, model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine software and provide training.
6	<b>Installation, commissioning and training</b>	
a	Installation and commissioning requirements	Bidder to state the requirements for installation of the machine software. State clearly the specification of electrical requirements if any. Vendor should carry out Installation and commissioning of the machine software and its accessories on a turnkey basis.
b	Training and documentation	Training should be provided during installation. Total training duration shall be of 07 days. Training shall be planned in two phases; basic for 4 days and advanced for 3 days. Training content and plan to be submitted. Training faculty must have adequate experience in this field.
		The vendor should supply the necessary manuals such as : Software instructions Maintenance and troubleshooting manual Training Installation and Commissioning Handling of accessories Software key (if any) Software CDs, etc.
c	Technical support and service	Manufacturer should have established after sales & service and network in India. The vendor shall have local service and application office and infrastructure to attend by visit within 48 hrs of need. Technical support personnel must have adequate experience in this field. Technical personnel details should be submitted. Name and address of the authorized service center/partner in India along with the certificate of authorization should be attached.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - Software Creo		
Sr.No.	Specification	
1	Latest version of Creo software with complete module of 2D, 3D Modelling, programming and FE analysis capabilities for product design, Engineering and manufacturing process.	
2	<b><u>GENERAL TERMS &amp; CONDITIONS</u></b>	
a	The Software should be supplied with latest version.	
b	The quote shall be supplied with reference to the module.	
c	Please mention the quote for Educational Bundle.	
d	The Software should be supplied in Suitable media for windows 8 or higher Version	
e	Specify the license type: Network <b>Perpetual / Subscription</b> License	
f	<b>Warranty Period</b> : Five years from the date of acceptance of installation.	
g	The Installation and training will be the responsibility of the supplier.	
h	During the above period of maintenance, any upgrades released shall be supplied free of cost.	
i	Annual Maintenance Contract charges in terms of percentage on the basic price for a period of FIVE years after the completion of Warranty period need to be quoted separately.	
3	<b>Any Others Accessories</b>	Bidder to specify and quote if any other accessories available/required for smooth running of the Software.
4	<b>Term and Conditions</b>	Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is education institutions centrally funded institution. A Satisfactory Performance certificate from two institutions to be provided for eligibility.
		Bidder should submit complete contact details Authorization Letter from OEM List of clients in last three years to be provided.
5	<b>Scope of Supply</b>	Bidder should submit complete scope of supply (Software, standard accessories, Optional Accessories etc with make model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine and provide training.
6	<b>INSTALLATION, COMMISSIONING AND TRAINING</b>	
6.1	<b>Installation and commissioning requirements</b>	Bidder should state the any hardware requirements for installation of the Software (like specification of server and workstation). State Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis.
6.2	<b>Training and documentation</b>	Total training duration shall be of 07 days. Training shall be planned in two phases basic for 4 days and advanced for 3 days. Training content and plan to be submitted. Training faculty must have adequate experience in this field.
		The vendor should supply the necessary manuals such as Software instruction. Maintenance and trouble manual Training. Installation and Commissioning. Handling of accessories. Software key (if any). Software CDs.
6.3	<b>Technical support and service</b>	Manufacturer should have established after sales & service network in India. The vendor shall have local service and application office and infrastructure to attend by visit within 48 hours of need. Technical support personnel must have adequate experience in this field. Technical support personnel details should be submitted. Name and address of the authorized service centre/ partner in India along with the certificate of authorization should be attached.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - UNIGRAPHICS NX		
Sr.No.	Specification	
1	Latest version of NX (UNIGRAPHICS/Siemens NX) software with complete module of 2D, 3D Modelling, programming and FE analysis capabilities for product design, Mould wizard, CAM.	
2	<b><u>GENERAL TERMS &amp; CONDITIONS</u></b>	
a	The Software should be supplied with latest version.	
b	The quote shall be supplied with reference to the module.	
c	Please mention the quote for Educational Bundle.	
d	The Software should be supplied in Suitable media for installation in windows 8 or higher version	
e	The license must be Network Perpetual License	
f	<b>Warranty Period : Three</b> years from the date of acceptance of installation.	
g	The Installation and training will be the responsibility of the supplier.	
h	During the above period of maintenance, any upgrades released will be supplied free of cost.	
i	Annual Maintenance Contract charges in terms of percentage on the basic price for a period of FIVE years after the completion of Warranty period need to be quoted separately.	
3	<b>Any Others Accessories</b>	Bidder to specify and quote if any other accessories available/required for smooth running of the Software.
4	<b>Term and Conditions</b>	Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is education institutions centrally funded institution.
		A Satisfactory Performance certificate from two institutions to be provided for eligibility.
		Bidder should submit complete contact details Authorization Letter from OEM
5	<b>Scope of Supply</b>	Bidder should submit complete scope of supply (Software, standard accessories, Optional Accessories etc with make model) in the technical bid without price.
		Bidder should supply complete start up package necessary to prove the machine and provide training.
6	<b>INSTALLATION, COMMISSIONING AND TRAINING</b>	
6.1	<b>Installation and commissioning requirements</b>	Bidder should state the any hardware requirements for installation of the Software (like specification of server and workstation).
		Vendor should carry out installation and commissioning of the software and its relevant module.
6.2	<b>Training and documentation</b>	Total training duration shall be of 07 days. Training shall be planned in two phases basic for 4 days and advanced for 3 days. Training content and plan to be submitted. Training faculty must have adequate experience in this field.
		The vendor should supply the necessary manuals such as Software instruction. Maintenance and trouble manual Training. Installation and Commissioning. Handling of accessories. Software key (if any). Software CDs.
6.3	<b>Technical support and service</b>	Manufacturer should have established after sales & service network in India.
		The vendor shall have local service and application office and infrastructure to attend by visit within 48 hours of need.
		Technical support personnel must have adequate experience in this field.
		Technical support personnel details should be submitted. Name and address of the authorized service centre/ partner in India along with the certificate of authorization should be attached.

# CENTRAL INSTITUTE OF PETROCHEMICALS ENGINEERING & TECHNOLOGY, KORBA

Technical Specification - AutoCAD		
Sr.No.	Specification	
1	Latest version of Auto CAD (Autodesk) software with complete module of 2D, 3D Modelling, programming and FE analysis capabilities for product design, Engineering and manufacturing process.	
2	<b><u>GENERAL TERMS &amp; CONDITIONS</u></b>	
a	The Software should be supplied with latest version.	
b	The quote shall be supplied with reference to the module.	
c	Please mention the quote for Educational Bundle.	
d	The Software should be supplied in Suitable media for windows 8 or higher version	
e	The license must be Network Perpetual License	
f	<b>Warranty Period:</b> Three years from the date of acceptance of installation.	
g	The Installation and training will be the responsibility of the supplier.	
h	During the above period of maintenance, any upgrades released will be supplied free of cost.	
i	Annual Maintenance Contract charges in terms of percentage on the basic price for a period of FIVE years after the completion of Warranty period need to be quoted separately.	
3	<b>Any Others Accessories</b>	Bidder to specify and quote if any other accessories available /required for smooth running of the Software.
4	<b>Term and Conditions</b>	Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is education institutions centrally funded institution. A Satisfactory Performance certificate from two institutions to be provided for eligibility.
		Bidder should submit complete contact details Authorization Letter from OEM List of clients in last three years to be provided.
5	<b>Scope of Supply</b>	Bidder should submit complete scope of supply (Software,standard accessories, Optional Accessories etc with make model) in the technical bid without price.
		Bidder should supply complete start up package necessary to prove the machine and provide training.
6	<b>INSTALLATION, COMMISSIONING AND TRAINING</b>	
6.1	<b>Installation and commissioning requirements</b>	Bidder should state the any hardware requirements for installation of the Software (like specification of server and workstation).
		Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis.
6.2	<b>Training and documentation</b>	Total training duration shall be of 07 days. Training shall be planned in two phases basic for 4 days and advanced for 3 days. Training content and plan to be submitted. Training faculty must have adequate experience in this field.
		The vendor should supply the necessary manuals such as Software instruction. Maintenance and trouble manual Training. Installation and Commissioning. Handling of accessories. Software key (if any). Software CDs.
6.3	<b>Technical support and service</b>	Manufacturer should have established after sales & service network in India.
		The vendor shall have local service and application office and infrastructure to attend by visit within 48 hours of need.
		Technical support personnel must have adequate experience in this field.
		Technical support personnel details should be submitted. Name and address of the authorized service centre/ partner in India along with the certificate of authorization should be attached.