PDEU
PANDIT DEENDAYAL ENERGY UNIVERSITY
GANDHINAGAR, GUJARAT
NAAC A++ Grade
Formerly Pandit Deendayal Petroleum University (PDPU)

PDEU IIC INNOVATION & INCUBATION CENTRE
NIDHI Technology Business Incubator

PDEU Innovation and Incubation Centre

EQUIPMENTS SPECIFICATIONS

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PDEU IIC Rapid Prototyping Lab

PDEU IIC's Rapid Prototyping Lab is a cutting-edge facility designed to accelerate the development of innovative ideas. Equipped with state-of-the-art 3D printers, CNC machines, laser cutters, and other relevant equipments,, the lab offers entrepreneurs and startups the tools and resources necessary to quickly and efficiently transform their concepts into tangible prototypes.

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Idea

Innovation

Prototyping

Final Product

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Electrical Discharge Machine

Application:
Creating complex cavities and intricate details in hard materials (e.g. Mold and Die Manufacturing)

Sr. No.	Description	Detailed specification
1	Work Tank	900 mm x 550 mm x 375 mm or higher
2	Work Table	600 mm x 400 mm or higher
3	X-axis Travel	350 mm or higher
4	Y-axis Travel	250 mm or higher
5	Z-axis Travel	250 mm or higher
6	Max Job Weight	500 kg
7	Max Job Height	325 mm
8	Dielectric Tank	240 liters
9	Pulse Generator Current	35 A
10	Material Removal Rate (Copper)	230 mm3/min
11	Material Removal Rate (Graphite)	280 mm3/min
12	Connected Load	4 kVA
13	Net Weight	1,250 kg or lower

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Hydraulic Press Brake Machine

Application:
Hydraulic press brakes are widely employed across industries for bending and forming sheet metal, facilitating the fabrication of various components and structures with precision and efficiency.

Description	Detailed specification
Tonnage	125 Metric Ton
Bending Capacity(Ref.: Mild Steel (Ultimate Tensile Strength – 45 kg/mm2))	5 mm (d) x 3,000 mm (l)
Table Size	220 mm x 3,000 mm
Clear Pass	2500 mm
RAM Stroke	150 mm
Open Height	350 mm
Closed Height	200 mm
Throat Depth	300 mm
RAM SpeedApproachPressingReturn	30 mm/s5 mm/s60 mm/s
Motor	10 HP (7.5 kW)
Machine Dimensions	3,400 mm x 2,450 mm x 2,600 mm
Weight	Should be less than 7,500 kg

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Variable Rake Angle Hydraulic Shear Machine

Description	Detailed specification
Cutting Capacity at Nominal Rake Angle(Ref.: Mild Steel (Ultimate Tensile Strength – 45 kg/mm2))	6 mm
Cutting Capacity at Maximum Rake Angle(Ref.: Mild Steel (Ultimate Tensile Strength – 45 kg/mm2))	8 mm
Cutting Capacity(Ref.: Stainless Steel (Ultimate Tensile Strength – 72 kg/mm2))	4 mm
Cutting Length	3,000 mm
Rake Angle Range	1° to 3°
Number of Strokes per Minute	13 to 7
Hold Downs	16
Back Gauge Range	760 mm
Motor	15 HP (11 kW)
Machine Dimensions	4,000 mm x 2,350 mm x 2,450 mm
Weight	Should be less than 7,500 kg

Application:
Hydraulic shear machines are commonly utilized in metalworking industries for cutting sheet metal with precision and efficiency, allowing for the fabrication of various components and structural elements

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Hydraulic Press Machine

Application:
Used in manufacturing for tasks such as forming, stamping, and assembling metal and plastic components with high force and precision, enabling efficient production across various industries.

Description	Detail specifications
Machine Type	Hydraulic press Machine
Automation Grade	Semi-Automatic & Programmable (PLC Controlled)
Control Type	Hydraulic (single or double cylinder)
Capacity	100 Tons maximum
Working area	400 mm x 800 mm or higher
Type of press	“C” or “H” type stable frame
Daylight	600 mm
Max force	1000 kg
Max stroke	500 mm
Service type	To bend metals
Power	Maximum 15 HP
Stroke & Pressure Control System	Pressure Switch/Limit Switch
End attachment	Cylinder end should be attachable different types of die to bend or straight various shape of materials
Power Supply	3 Phase / 415 V, 50 Hz
Control Voltage	24 V DC
Main Pump Motor	To be given by Bidder (Siemens/ABB/CG)
Weight	Should less than 1000 Kg

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Air Compressor

Description	Detail specifications
Capacity	2 HP
Type	2-stage Double Cylinder
Piston Displacement	7.46 cfm
Max. Pressure	10.5 kg/cm2g with Air receiver (150 litre)

Application:

- Air compressor Machine can be used for painting of machine, chip removal for CNC and VMC Machine.
- Can be used to store compressed air.

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Vertical Machining Centre

Application:

VMC can be used for Milling, boring, drilling, carving, engraving, tapping, and countersinking processes of metal parts. It also can be used for making complex dies.

Description	Detailed specification
Table	
Table Size (mm x mm)	1200 X 530
T-Slot Dimension (mm x mm x mm)	4 X 18 X 100
Distance from Floor to Table (mm)	990
Max. Load on Table (kgf)	800
Capacity	
X-Axis Travel (mm)	1020
Y-Axis Travel (mm)	510
Z-Axis Travel (mm)	510
Dis. From Spindle Face to Table Top (Min.-Max.) (mm)	150-660
Feed	
Rapid Traverse (X, Y & Z Axis) (m/min)	24
Cutting Feed (m/min)	10
Main Spindle	
Spindle Speed Range (rpm)	0-10000
Spindle Motor Power -Fanuc (kW)	11/7.5
Spindle Motor Power -Siemens (kW)	15.8/10.5
Front Bearing Bore (mm)	70
Automatic Tool Changer	
Number of Tool	20-24
Max. Tool Dia. Pockets (All/Adj. empty) (mm)	80/125
Max. Tool Weight (kg)	
Max. Tool Length (mm)	
Tool change time / Chip-to-chip time (sec)	3.5 / 7
Accuracy (As per VDI/DGQ 3441)	
Positioning Uncertainty (P) (mm)	0.01
Repeatability (Ps medium) (mm)	0.005
Other Data	
Weight (kg)	<=6700
Length (mm)	2600
Width (mm)	2500
Height (mm)	2850
CNC System	Fanuc/Siemens/Mitsubishi

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CNC Mini Milling Machine

Application:
CNC mini milling machines are versatile tools utilized in prototyping, small-scale production, and hobbyist applications for precision machining of small parts and components from various materials such as metal, plastic, and wood.

Description	Detail specifications
Working Axis Dimension (X,Y,Z)	500mm X 400mm x 300mm
Work Table Load	250 kgs
Position Accuracy	0.006 mm
Repeatability	0.005 mm
Table	T – Slots
Spindle Power	2 kW
Spindle Speed	Minimum: 3000 rpm; Maximum: 24000 rpm
Spindle cooling system	Water cooled system
Spindle Taper/Collet Size	ER20 (3.175 – 12 mm)
Feed Rate	8000 mm/min
Driving system	AC Servo
Lubrication system	Automatic
Power supply	3 Phase AC, 415 V
Total Power	5 kW

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CNC Lathe Machine

Application:

CNC turning is widely employed across industries for the precise and efficient fabrication of cylindrical components, including shafts, pins, and fittings, among others.

Description	Detailed specification
Capacity	
Distance between centers	600 mm
Swing over bed	400-500 mm
Maximum turning diameter	300-350 mm
Maximum turning Length	500-550 mm
Std. Turning diameter	200 mm
Slides	
Cross Travel (X-axis)	160-185 mm
Longitudinal Travel (Z-axis)	500-550 mm
Rapid Rate	24 m/mm
Main Spindle	
Spindle Nose	A2-6
Spindle Bore	63 mm
Max. bar capacity	51 mm
Chuck size	200 mm
Speed range	50-3500 rpm
Full power speed range	1000-2250 rpm
Spindle motor	7.5/11 kW
Tail Stock	
Quill Diameter	80 mm
Quill Stroke	100 mm
Taper in quill	MT4
Accuracy	
Positioning	8 µm
Repeatability	7 µm
Tooling System: Turret	
No. of tool stations	8
Tool size	25 x 25 mm
Max. boring bar capacity	40 mm

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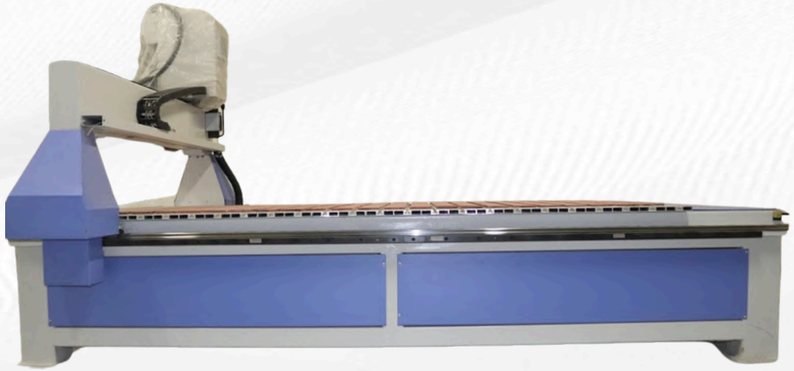
CNC Router Machine



Application:
CNC router machines are widely employed in woodworking, and fabrication industries for precise cutting, carving, and engraving of materials such as wood, plastic, and foam, enabling the creation of intricate designs and components with high accuracy and efficiency.

Description	Detail specifications
Working Area (X-Y-Z axis)	1300 mm x 2500 mm x 300 mm
Spindle Motor	6 kW
Linear Guide	THK 25 mm
Ball screw for “Z”	PMI 25 mm
Drive Mechanism	Helical Rack & Pinion
Inverter	10 HP
Engraving & Cutting Tools	10 Nos. Standard
Lubricating system	Automatic
Resolution	200 microns or lower
Software compatibility	Appropriate
Working Material	Wood, Acrylic, MDF and HDP
Accessories	Stabilizer, Computer
AMC	5 years

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Pipe Bending Machine

Application:
Pipe bending machines are commonly utilized in manufacturing industries, particularly in the construction and automotive, for precisely bending pipes and tubes to specific angles and radii, facilitating the fabrication of various structures and components with curved geometries.

Description	Detail specifications
Machine Type	Pipe Bending Machine
Automation Grade	Semi-Automatic
Max capacity (Dia x Thickness)	50 mm x 5 mm
Min Capacity(Diameter)	12 mm
Max Bend Radius	Customized
Min bend radius	3 x Diameter (D)
Pipe Diameter	50 mm x 5 mm
Bending shape	U shape, machine can be able to bend other shape by just changing die
Bending pipe cross section	Circular & Square
Bending Direction	Anti-clockwise
Power	5 HP
L x W x H	2000 mm
Material to be bend	Aluminium, Mild Steel, Stainless Steel
Bend angle	10 - 180 degree
Voltage	220 V
Frequency	50 Hz
Bending rpm	10 RPM

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Laser Cut & Engraver Machine

Description	Detail specifications
Working Area (X-Y-Z axis)	1200 mm x 900 mm
Power supply	AC 230V / single phase / 50Hz
Laser tube	80W
Optics	Lens and mirror
Accessories	Blower, compressor, chiller, tool kit

Application:
Utilized for precision cutting and engraving on materials such as wood, MDF, and acrylic, these machines enable intricate design creation and customization with high accuracy.

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Arc Welding Machine

Description	Detail specifications
Power source	Inverter based power source
Main Supply	3 Phase, 50 Hz
Duty cycle	60%
Current Range	20-400 A
OCV	80
Enclosure class	IP21
Insulation	Class H
Cooling arrangement	Air cooling
Ancillaries	Welding Torch and its assembly
	Ceramic Nozzle

Application:
Arc welding machines are essential tools in metalworking and construction industries for joining metals through the application of an electric arc between an electrode and the workpiece, creating intense heat to melt and fuse the materials together, enabling the fabrication of structures, components, and repairs with high strength and durability.

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TIG Welding Machine

Description	Detail specifications
Power source	Inverter based power source
Main Supply	3 Phase, 50 Hz
Duty cycle	60%
Current Range	20-400 A
OCV	80
Enclosure class	IP21
Insulation	Class H
Cooling arrangement	Air cooling
Ancillaries	Welding Torch and its assembly
	Ceramic Nozzle

Application:
TIG welding machines are essential tools in metalworking industries for joining various metals with precision and control, using a non-consumable tungsten electrode to create strong and high-quality welds in materials such as steel, aluminum, and stainless steel.

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GAS Welding / Cutting Machine

Description	Detail Specifications
Torch	Both Gas welding and cutting
Regulators	2-stage pressure regulators
Flashback arrestors	For Oxygen and acetylene
Flow meter	For Oxygen and acetylene
Gas hoses	Industrial grade and length minimum 5 meters.

Application:
Gas welding machines are versatile tools utilized in metalworking and fabrication industries for joining metals through the application of heat generated by burning a mixture of fuel gas and oxygen, allowing for the fusion of materials such as steel, copper, and brass with precision and control.

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MIG-MAG Welding Machine

Description	Detail specifications
Power source	Inverter based power source
Main Supply	3 Phase, 50 Hz
Duty cycle	60%
Current Range	60-400 A
OCV	75
Enclosure class	IP21
Insulation	Class H
Ancillaries	Wire feeder with speed: 10-20 m per min
	wires of 1.2 to 3.2 mm dia

Application:
MIG-MAG welding machines, also known as Gas Metal Arc Welding (GMAW) machines, are widely used in metalworking industries for joining metals by feeding a continuous solid wire electrode through a welding gun, along with a shielding gas, to create a strong and precise weld, making them versatile tools for various applications in manufacturing, fabrication, and construction.

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SPOT Welding

Application:
Spot welding machines are integral in manufacturing industries, particularly automotive and sheet metal fabrication, for joining metal sheets together by applying pressure and passing a high current through the materials at specific points, creating localized welds quickly and efficiently without the need for additional materials like filler rods or flux.

Details	Detail Specifications
Power source	Thyrister control timer
Main Supply	3 Phase, 50 Hz
Duty cycle	50 %
Power	15 KVA
Maximum Short circuit current	8 to 12 KA
OCV	80
Nominal Throat clearance	250Amps
Primary Voltage Supply	415
Cooling arrangement	As applicable
Ancillaries	Spare copper electrodes

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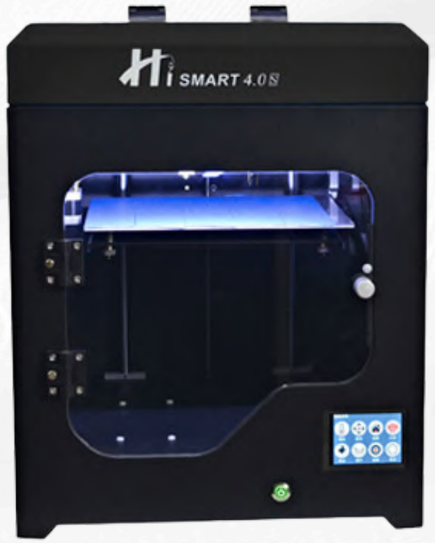
FDM - 300



Application:

This 3D printing machine facilitates the creation of 3D models using materials such as ABS, PETG, and PLA, offering versatility and compatibility for a wide range of printing applications.

Description	Detail specifications
Quantity	2
Technology	Fused Deposition Modeling (FDM)
Build Volume (L x W x H)	(300 mm x 300 mm x 250 mm) or above
Build Plate	Aluminum heat bed with glass top
Build Plate Temperature	120oC
Material support	ABS, PLA, PETG, HIPS, PVA etc.
Extruder	Dual (for dual color printing)
Nozzle Diameter	0.4 mm (can be customized to 0.25 mm, 0.6 mm, 0.8 mm)
Layer resolution	50 microns or lesser
Extrusion Temperature	300oC
Build Platform	Preheat temperature control up to 120®C Build platform material may be Steel, Glass or any other suitable material that can withstand the temperature
Extruder HeadPositional accuracy	15µm or better
Auto bed level	Machine Should have facility to have auto bed level for printing precise first layer
Pause & Print function	Machine Should have facility to pause and resume print manually
Resurrection System in case of power Outrage	In case of power shutdown the Printer should have inbuilt feature that enables to start the print from the same position after power is restored without losing any information of the print data
Auto shut off	Yes (To prevent from overheating)
Chamber	Closed enclosure
End filament Sensor	Machine should have end filament sensor to indicate the filament completion and pause print in case of filament empty. The machine should resume the print from same position after loading new filament.
Data Import Formats	The printer must be able to process STL, OBJ etc.
Communication interface	USB 2.0 and SD card Printer must be standalone
Front Panel	The Machine should have a control panel preferable touch screen that should indicate the progress of current job. Should have pause, abort, start etc general features.
Safety feature	Should comply Electrical safety ISO IEC 60950-1 or equivalent.
Electrical	220 V ac with Indian compatible socket.
Software support	Perpetual License

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FDM - 500

Application:

This 3D printing machine facilitates the creation of 3D models using materials such as ABS, PETG, and PLA, offering versatility and compatibility for a wide range of printing applications.

Description	Detail specifications
Quantity	2
Technology	Fused Deposition Modeling (FDM)
Build Volume (L x W x H)	(500 mm x 500 mm x 500 mm) or above
Build Plate	Aluminum heat bed with glass top
Build Plate Temperature	120oC
Material support	ABS, PLA, PETG, HIPS, PVA etc.
Extruder	Dual (for dual color printing)
Nozzle Diameter	0.6 mm (can be customized to 0.25 mm, 0.6 mm, 0.8 mm)
Layer resolution	50 microns or lesser
Extrusion Temperature	300oC
Build Platform	Preheat temperature control up to 120®C Build platform material may be Steel, Glass or any other suitable material that can withstand the temperature
Extruder HeadPositional accuracy	15µm or better
Auto bed level	Machine Should have facility to have auto bed level for printing precise first layer
Pause & Print function	Machine Should have facility to pause and resume print manually
ResurrectionSystem in case of power Outrage	In case of power shutdown the Printer should have inbuilt feature that enables to start the print from the same position after power is restored without losing any information of the print data
Auto shut off	Yes (To prevent from overheating)
Chamber	Closed enclosure
End filament Sensor	Machine should have end filament sensor to indicate the filament completion and pause print in case of filament empty. The machine should resume the print from same position after loading new filament.
Data ImportFormats	The printer must be able to process STL, OBJ etc.
Communication interface	USB 2.0 and SD card Printer must be standalone
Front Panel	The Machine should have a control panel preferable touch screen that should indicate the progress of current job. Should have pause, abort, start etc general features.
Safety feature	Should comply Electrical safety ISO IEC 60950-1 or equivalent.
Electrical	220 V ac with Indian compatible socket.
Software support	Perpetual License

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DLP 3D Printer

Application:
Utilized for 3D printing from liquid resin materials, this machine employs SLA resin to achieve minimum porosity and exceptional structural strength, making it ideal for high-precision manufacturing applications.

Description	Detailed specifications
Quantity	1
Bed Size (L x W x H)	(120 mm x 65 mm x 155 mm) or above
Technology	Digital Light Processing (DLP)
LED Source	HD+ UV LED Projector
LED Source Life	40000 hours or higher
Laser Wavelength	405 nm
Layer Resolution (XY)	55 microns or lesser
Layer Resolution (Z)	50 microns or lesser
Print Speed	2500 layers / hour or higher
Resin	Cast able/Non-cast able
UV Distortion	0.1%
Curing	UV curing oven
Data Import Formats	STL & STC
Software Support	Perpetual License
Warranty	Minimum 1 year (including projector engine)

Thank You

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