

VISHNU FOUNDATION TBI EQUIPMENTS



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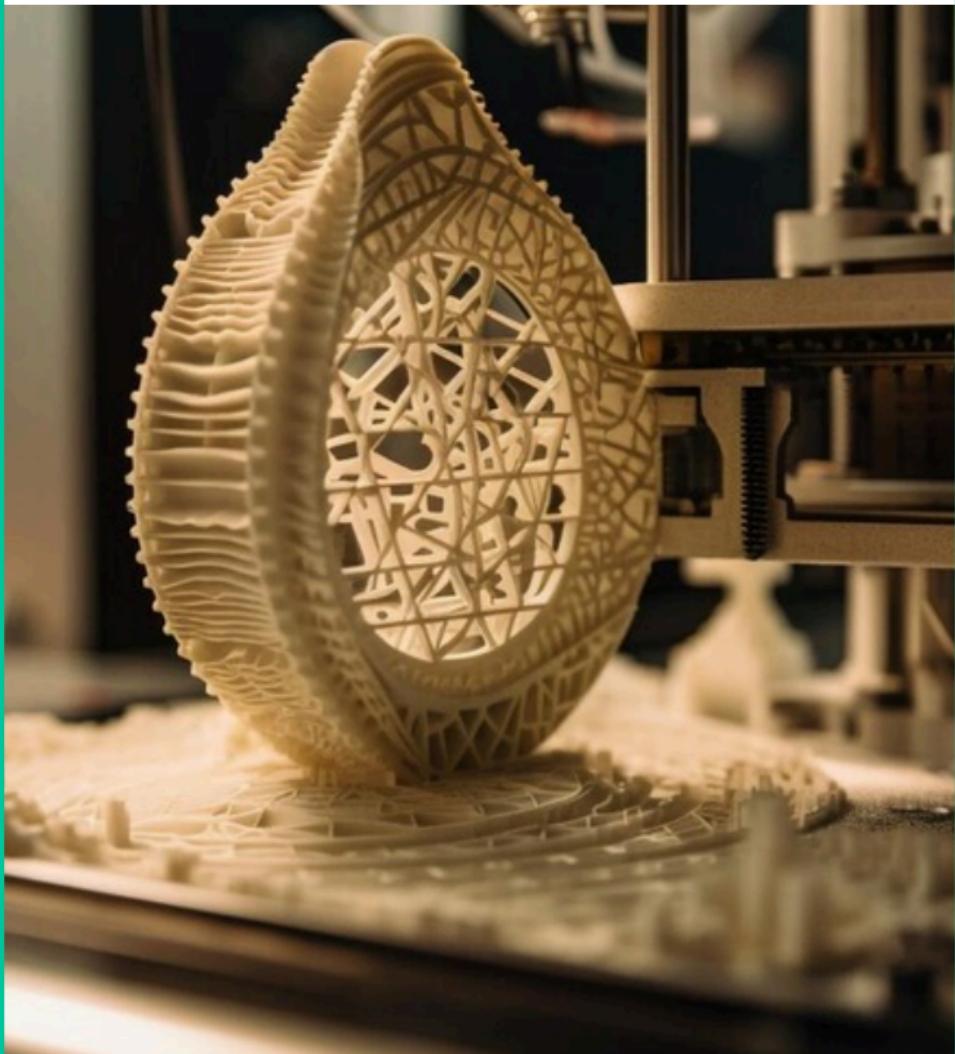
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FABRICATION LAB (RAPID PROTOTYPING)



CALIBRY MINI 3D SCANNER

Calibry Mini 3D scanner is a handheld device that captures the shape and appearance of real world objects through structured light technology, creating accurate digital 3D models. Known for its portability, accuracy, and ability to capture color textures.

Specifications:

| | |
|------------------------|--|
| Accuracy | Up to 0.1 mm |
| Accuracy over distance | Up to 0.1 mm over 1 m |
| Point resolution | Up to 0.6 mm |
| Depth of view | 55 - 95 cm |
| Field of view | Min - 280 x 360 mm Max - 490 x 650 mm |
| Texture | Yes |
| Texture resolution | 2.3 MP |
| Light source | White LED |
| Frame Rate | up to 35 fps |
| Data Acquisition speed | Up to 3M points/sec |
| Multi core processing | Yes |
| Weight | 900 gr |
| Touchscreen | Yes, 4 in |
| Software | Calibry Nest Software |
| Operating temperature | +5/-40°C |
| Dimensions, in mm | 165 x 85 x 274 |

Equipment Image



Working:

Preparation:

- Position the object and select tracking mode.

Scanning:

- Project structured light onto the object, capturing deformations.
- Calculate 3D data and capture color texture simultaneously.

Preview and Adjustment:

- Real time preview on the built in screen.
- Make adjustments, ensuring complete coverage and details.

Processing and Export:

- Transfer data to Calibry Nest software.
- Clean up, merge scans, and export the final 3D model in various formats.

Applications:

- Reverse engineering
- Quality control
- Prototyping
- Healthcare and Dentistry

FIGURE 4 STANDALONE 3D PRINTER

The Figure 4 Standalone 3D printer uses Digital Light Processing (DLP) technology, employing a digital light projector to cure layers of liquid resin and build up a 3D object with high precision and speed.

Specifications:

Equipment Image

| | |
|-------------------------|---|
| Type | Digital Light Processing (DLP) technology |
| Build Volume | 124.8 x 70.2 x 196 mm (4.9 x 2.8 x 7.7 inches) |
| Overall Dimensions | 426 x 489 x 971 mm (16.7 x 19.25 x 38.22 inches) |
| Weight | 34.5 kg (76 pounds) |
| Electrical Requirements | 100-240VAC, 50/60Hz, 4.0A (max) |
| Plug Type | Regional (NEMA 5-15P, Schuko F, BS 1363, AS/NZS 3112) |
| Power Consumption | 300W (typical) |
| Maximum Current Draw | 4.0A |
| Operating Temperature | 18°C to 28°C (64°F to 82°F) |
| Operating Humidity | 30% to 50% |
| Print Materials (resin) | standard, water washable, flexible, high temperature, castable, biocompatible |
| Print Platform | Aluminum or glass, removable for easy cleaning |
| Projector | DLP projector with precise light control for high quality prints |
| Safety Features | Internal interlocks and sensors for safe operation |
| Software | 3D Systems 3D Sprint |



Working:

- Create or obtain a 3D digital model.
- Use slicing software to break down the model into layers.
- Load photopolymer resin into the printer.
- Calibrate the printer for precise layer alignment.
- Utilize UV light to selectively solidify resin layer by layer.
- Build the 3D object gradually.
- Optionally create support structures for complex geometries.
- Apply post curing for complete material curing.
- Remove supports and perform post processing.
- Inspect the finished object for quality.

Applications:

- Rapid Prototyping
- Customized Manufacturing
- Dental and Medical Devices
- Jewelry Design
- Educational Prototyping
- Mold Making
- Electronics Enclosures
- Architectural Models
- Small Batch Production

SLA 3D PRINTER

An SLA (Stereolithography) 3D printer operates using resin based additive manufacturing technology. It selectively cures liquid resin layer by layer, employing a light source like a laser or UV rays. As each layer is cured, the build platform lowers or the resin container rises, systematically creating a solid 3D object.

Specifications:

| Feature | Description |
|---------------------------|--|
| 3D Printing Technology | Low Force Stereolithography (LFS) |
| Laser Specifications | 1 Light Processing Unit Class 1 Laser Product 405 nm violet laser 250 mW laser |
| Dimensions | Printer : 57x51x69cm Build Platform : 18x17x8cm Resin Tank:35x30x8 cm |
| Laser Spot Size(FWHM) | 85 microns |
| Electrical Specifications | voltage (100 240VAC), 50/60Hz |
| Operating Temperature | Upto 35 °C (95 °F) |
| Amperage & Consumption | 2.6A, 150 220W |
| Layer Resolution | 25 100 microns |
| Print Speed | 20 50mm/hour |
| Connectivity | USB, Wi Fi, and Ethernet |
| Liquid Resin | standard, flexible, high temp, biocompatible |
| Slicing Software | Chitubox, PreForm, Lychee slicer |
| Materials | Flexible resins, Biocompatible resins, True silicone |
| Shore Hardness | 40A 90A |
| Sound Emission | < 70 dB(A). |
| Weight | 17.2 Kg |

Equipment Image



Working:

- Create a 3D digital model and use slicing software to divide it into layers.
- Load liquid photopolymer resin into the printer and set it up for printing.
- Print layers with a laser or light source, solidifying the resin while raising the platform for each new layer.
- Post cure the printed object for complete hardening.
- Remove the object and supports, clean off excess resin, and inspect for quality.

Applications:

- Prototyping and product design
- Jewellery and art creation
- Dental and medical applications
- Model making and miniatures.

ZMORPH FDM 3D PRINTER

The Zmorph FAB is a versatile 3D printer with multifunctional capabilities, including 3D printing, CNC milling, laser cutting, and engraving, facilitated by its modular design for seamless toolhead switching.

Specifications:

| Feature | Specification |
|------------------------|--|
| Name | All In One 3D Printer |
| Type/Model | Zmorph FAB |
| Technology | FDM (fused deposition modeling) |
| Operations | Fused Filament Filament(FFF) Technology, CNC milling, Laser Engraving and Cutting |
| Connectivity | USB, Wi Fi, Ethernet |
| Software | Voxelizer |
| File Extensions | .stl, .obj, .step, .dxf, .png, .bmp |
| Nozzle Diameter | 0.3, 0.4, 0.6 mm |
| Temperature | Nozzle :250°C Build Plate :115°C Storage : 10 to 40°C |
| Laser light Wavelength | 450nm |
| Travel Speed | Up to 120mm/s |
| Dimensional Accuracy | +/- 0.2 mm |
| Build Volume | 250mm (L) x 250mm (W) x 250mm (H) |
| Filament Diameter | 1.75mm diameter |
| Materials | ABS, nylon, HDPE, PTFE, PC, PP, POM, PMMA, PVC, HIPS, LDPE, PET, carbon fiber, ccl fr4, dibond, tcf, wood, plywood, wood fiber boards, aluminum, brass, copper, cardboard, machining wax, modeling board, styrodur |
| Voltage | 100-240VAC (50/60Hz) |
| Power Consumption | 350W |

Applications:

- Prototyping & Product Design
- Sculptures, engravings, personalization
- Architectural models, jewelry, medical devices

Equipment Image



Working:

- Create or obtain a 3D digital model.
- Set up the Zmorph 3D printer for the desired function (3D printing, CNC milling, or laser engraving).
- Load the appropriate material or tool for the chosen function.
- Use slicing software to convert the 3D model into G code.
- Start the chosen process, monitor in real time, and address issues as needed.
- Complete any necessary steps like support removal after 3D printing.
- Switch tools for different functions.
- Inspect the finished object for quality.

FABRICATION LAB

(CONVERT IDEAS INTO
MVP/PRODUCT)



AIR COMPRESSOR

Air compressors are devices that convert power into kinetic energy by compressing and pressurizing air. The compressed air can then be used for a variety of applications, such as powering tools, inflating tires, or operating pneumatic equipment.

Specifications:

| | |
|--------------------------------|---------------|
| Air Tank Capacity | 500 L |
| Compressor Technology | Reciprocating |
| Motor Power | 3 HP |
| Maximum Flow Rate | 25 CFM |
| Pressure | 5 Bar |
| Number of Compression Stages | Three Stage |
| Cooling Method | Air Cooled |
| Power Source | Diesel |
| Engine Speed Unloaded | 1300 Rpm |
| Engine Speed Maximum Loaded | 2100 Rpm |
| Max Unloading Working Pressure | 164 Psi |
| Model No | XAS 1800 JD7 |
| Number of Cylinders | 6 |
| Minimum Order Quantity | 3 |

Equipment Image



Working:

- The compressor takes in atmospheric air through an intake valve.
- The air is compressed using a reciprocating motion (in the case of a reciprocating compressor) or another suitable mechanism.
- Compression increases the pressure of the air, resulting in a decrease in volume.
- Compression generates heat due to the increased pressure on the air molecules.
- In some cases, compressors have cooling mechanisms to manage the temperature rise.
- The compressed air is then stored in a tank or reservoir, increasing its potential energy.
- When needed, the compressed air is released from the storage tank through an outlet valve.
- This high pressure air can be used for various applications, such as powering pneumatic tools, filling tires, or other industrial processes.

Applications:

- Industrial Manufacturing
- Construction Sites
- Automotive Repair
- HVAC Systems
- Medical Equipment
- Painting and Finishing
- Mining Operations
- Oil and Gas Exploration
- Wastewater Treatment
- Food and Beverage Industry

BELT GRINDER MACHINE

A belt grinder machine is a versatile tool designed for shaping, sharpening, and finishing various materials through abrasive belt grinding. It consists of a motor driven abrasive belt, allowing for precise material removal and surface refinement.

Specifications:

| Specification | Value |
|--------------------------|------------------|
| Belt Size | 50 x 2000 mm |
| Power Consumption (Watt) | 0.75 kW |
| Model | RGBG 02 |
| Usage/Application | Industrial |
| Material | Cast Iron |
| Phase | 3 Phase |
| Spindle Lock | Non Spindle Lock |
| Voltage | 440 V |
| Spindle Speed | 2800 rpm |

Equipment Image



Working:

- Power on the machine to initiate the grinding process.
- Load the workpiece onto the abrasive belt for material processing.
- Set machine parameters, including speed and pressure, ensuring precision.
- Activate the abrasive belt rotation to grind or shape the workpiece material.
- Inspect the finished workpiece for desired results before unloading, then power off the machine.

Applications:

- Applied in woodworking tasks for shaping and finishing wood surfaces with precision.
- Widely used in automotive workshops for grinding and shaping metal components, including weld removal.
- Used for sharpening various cutting tools, ensuring a sharp and efficient edge.
- These are crucial in metal fabrication for shaping and finishing, providing smooth surfaces.

CNC MACHINE

CNC machine stands for Computer Numerical Control machine. It is a manufacturing tool controlled by computer programs that dictate precise movements of the machine's cutting tools. This automation ensures accuracy and consistency in the fabrication of parts.

Specifications:

| | |
|----------------------------|--|
| Machine type | VMC (Vertical Machining Center) |
| Number of axes | 3 axis |
| Work envelope (X, Y, Z) | 1000 mm x 600 mm x 600 mm |
| Table size | 1200 mm x 600 mm |
| Weight capacity | 1200 kg |
| Spindle speed | 60 6000 rpm |
| Spindle power | 15 kW |
| Tool taper | BT40, CAT40 |
| Rapid traverse | 30 m/min |
| Feed rates | 110000 mm/min |
| Positional accuracy | ±0.01 mm |
| Repeatability | ±0.003 mm |
| Tool capacity | 24 tools |
| Tool change time | 6.8 seconds |
| Controller type | Fanuc, Siemens |
| Features | Real time monitoring, adaptive control, networking |
| Chip removal system | Conveyor, chip auger |
| Power requirements | 480V, 3 phase |
| Environmental requirements | 15-30°C, 40-80% humidity |

Equipment Image



Working:

1. Create a 3D model using CAD.
2. Generate CNC code with CAM.
3. Translate CAM instructions to G code.
4. Set up workpieces and tools on the CNC machine.
5. Calibrate tools.
6. Execute programmed toolpaths for machining.
7. Monitor and conduct quality control.
8. Automatically change tools.
9. Could you remove the finished part?
10. Reuse the CNC program for consistent production.

Applications:

1. Metal Cutting and Machining
2. Electronics Manufacturing
3. Medical Machining
4. Aerospace Industry
5. Automotive Manufacturing

DIGITAL MICROSCOPE

A digital microscope is a variation of a traditional optical microscope that uses optics and a digital camera to output an image to a monitor, sometimes by means of software running on a computer.

Specifications:

| | |
|-----------------------|---|
| Magnification Range | 10x - 2000x |
| Resolution | 5 megapixels |
| Image Sensor | CMOS |
| Illumination | LED (adjustable intensity) |
| Field of View | Adjustable |
| Focus System | Manual and/or Auto focus |
| Capture Method | Still Images, Video |
| Frame Rate (Video) | Up to 30 frames per second |
| Connection Interface | USB 2.0/3.0, HDMI, Wi-Fi |
| Compatibility | Windows, Mac, Linux |
| Software | Included, supports image capture and analysis |
| Measurement Tools | Yes, built in or through software |
| Power Source | USB or External Power Supply |
| Dimensions | Height: [value] mm, Width: [value] mm, Depth: [value] mm |
| Weight | [value] grams |
| Operating Temperature | [min max] °C |
| Storage Temperature | [min max] °C |
| Additional Features | XYZ Stage, Polarizer, Measurement Markers, etc. |
| Accessories Included | Microscope Stand, Calibration Slide, Software CD, User Manual |
| Warranty | [value] years |

Working:

- Connect the digital microscope to a power source and ensure proper lighting conditions.
- Place the specimen on the microscope stage and secure it in place.
- Adjust the magnification level using the microscope's controls.
- Focus the image by turning the focusing knob until the specimen is clear.
- Capture or view the digital images through the microscope's camera or connected.

Equipment Image



Applications:

- Biological Research
- Medical Diagnosis
- Material Science
- Quality Control in Manufacturing
- Forensic Analysis
- Electronics Inspection
- Educational Purposes
- Environmental Monitoring
- Archaeological Studies
- Art Restoration and Conservation
- Food and Beverage Industry

HAKKO REWORK STATION

Desoldering is the process of removing solder from a connection to allow for component changes or repairs. Soldering is the process of creating a permanent electrical connection between two or more components by melting and flowing solder to make the joint.

Specifications:

| Parameter | Soldering Iron | Desoldering Tool |
|----------------------------|-----------------------------------|------------------|
| Power Consumption | 60 W | 70 W |
| Input Voltage Range | 170 to 270 V | 170 to 270 V AC |
| Temperature Range | 180 to 480 °C | 180 to 480 °C |
| Temperature Stability | ± 10°C | N/A |
| Temperature Accuracy | ± 1°C of tolerance at idling time | N/A |
| Tip to Ground Potential | Under 2 mV | N/A |
| Tip to Ground Resistance | Under 2 Ohms | N/A |
| Desoldering Tool Pump Type | N/A | Diaphragm type |
| Desoldering Tool Vacuum | N/A | 600 mm/Hg |

Equipment Image



Applications:

Soldering Applications:

- Electronics Assembly
- Wire and Cable Connections
- Jewellery Making
- Plumbing
- Automotive Repairs

De soldering Applications:

- Electronic Rework
- Component Salvaging
- Faulty Component Replacement
- Circuit Modification
- Reuse of Parts

Working:

Soldering:

- Heat the soldering iron to the desired temperature, typically within the range of 180 to 480 °C.
- Apply the heated soldering iron to the joint, melting the solder wire, and create a secure electrical connection.
- Ensure the components to be soldered are clean and properly positioned.
- Allow the solder to cool and solidify, forming a durable bond between the connected parts.
- Maintain appropriate tip to ground potential and resistance for efficient and safe soldering.

Desoldering:

- Activate 70 W desoldering tool with diaphragm pump.
- Apply heated desoldering tip to melt solder and create a vacuum.
- Ensure proper input voltage (170 to 270 V AC) and temperature range (180 to 480 °C).
- Utilize diaphragm pump to create a 600 mm/Hg vacuum, removing molten solder.
- Collect or expel desoldered material, preparing the component for rework or replacement.

HYDRAULIC PRESS MACHINE

A hydraulic press is a machine press that generates compressive force through the use of a hydraulic cylinder. It employs a hydraulic lever in place of a mechanical lever. A hydraulic press is made up of two interconnected cylinders. Each cylinder is filled with hydraulic fluid, and one is bigger than the other.

Specifications:

| | |
|-------------------------------|---------------------|
| Capacity | 600 tons |
| Height | 5300 mm (+/-) 100mm |
| Wideness | 6500 mm (+/-) 100mm |
| Width | 1500 mm (+/-) 100mm |
| Table Area (Wideness) | 3000 5000 mm |
| Table Area (Height/Length) | 1200 1500 mm |
| Minimum Work Capacity | 1150 mm |
| Distance Between Trays (Max.) | 2300 mm |
| Piston Stroke (Minimum) | 500 mm |
| Pump | 500 90 l/min |
| Tank Capacity (Minimum) | 670 L |
| Type | C Type |

Equipment Image



Working:

- The material to be shaped or compressed is placed onto the press bed.
- The hydraulic system activates, causing the press to close and apply force.
- The press exerts pressure, shaping or compressing the material based on the die or mold used.
- The press maintains pressure for a specific duration to ensure proper forming or compression.
- After completion, the press opens, and the formed or compressed material is removed for further processing.

Applications:

- Metal Forming
- Plastic Molding
- Rubber Processing
- Straightening and Bending
- Powder Compaction

MAKITA HB500

The Makita HB500 Magnetic Drilling Machine is a portable tool designed for drilling precise holes in metal surfaces. It features a powerful magnetic base for secure attachment to ferrous metals, making it versatile for tasks like creating holes for bolts and fasteners.

Specifications:

| | |
|--------------------------|---------------------|
| Cutter Capacity | 12 – 50mm |
| Chuck Capacity | 5/8" (with adapter) |
| 'No Load' Speed | 350/650 rpm |
| Power Consumption | 1150 W |
| Clamping Force | 9300 N (950 kg) |
| Dimensions (L x H x W) | 290 x 450 x 150 mm |
| Weight | 18.5 kg |
| Voltage | 110/230 V |
| Cutting Capacity (Steel) | 50mm (2") |
| Chuck Capacity | 16mm (5/8") |
| No Load Speed (rpm) | 350/650 |
| Clamping Force | 9300 N (950 kg) |
| Protection | Double Insulation |
| Net Weight | 18.5 kg |

Equipment Image



Applications:

- Construction
- Automotive
- Aerospace
- Architectural
- Industrial Fabrication

Working:

- Secure the workpiece and position the machine over the drilling location.
- Set cutter and chuck capacities, and adjust the 'No Load' speed.
- Connect the machine to power and switch it on.
- Activate the magnetic base for a stable connection.
- Engage the cutter for the drilling process.
- Disengage the cutter once drilling is complete and switch off the machine.
- Deactivate the magnetic base, release the machine, and clean the work area.

MIG WELDING MACHINE

Gas metal arc welding (GMAW), also known as MIG (metal inert gas) welding or MAG (metal active gas) welding, is a process in which an electric arc forms between an electrode and a metal workpiece, heating the metals and causing them to melt, and be joined.

Specifications:

| | |
|----------------------------|-----------------|
| Input Voltage (V) | AC 415 ± 15% |
| Frequency (HZ) | 50 / 60 |
| Rated Input Current (A) | 20.8 |
| Power (KVA) | 15 |
| Output Current Range (A) | 50 - 400 |
| Rated Output Voltage (V) | 16.5 - 31.5 |
| Duty Cycle (%) | 60 |
| Power Factor | 0.93 |
| Efficiency (%) /td> | 85 |
| Wire feeding Speed (m/min) | 2.5 - 18 |
| Wire Diameter | 0.8 / 1.0 / 1.2 |
| Output Cable (mm) | 35+ |
| MMA Facility | Available |
| Inverter Technology | IGBT |
| Type Wire Feeder | Separated |
| Net Weight (Kg) | 28 |

Equipment Image



Applications:

- Automotive Industry
- Manufacturing and Fabrication
- Repair and Maintenance
- Electronics Inspection
- Educational Purposes
- Environmental Monitoring
- Archaeological Studies
- Art Restoration and Conservation
- Food and Beverage Industry

Working:

- MIG welding involves feeding a continuous wire electrode through a welding gun.
- The wire melts and forms an electric arc with the workpiece, creating a weld pool.
- Simultaneously, an inert gas, typically Argon or a mix, shields the weld area from atmospheric contamination.
- The molten wire is deposited onto the workpiece, creating a solid and strong weld joint.
- MIG welding is known for its efficiency, speed, and versatility in various metal fabrication applications.

PIPE BENDING MACHINE

A pipe bending machine is a mechanical device designed to bend pipes or tubes into specific shapes or angles. By utilizing different bending techniques, these machines can create smooth and accurate bends in various pipe materials, such as steel, stainless steel, copper, and aluminum.

Specifications:

| | |
|-----------------------------------|----------------|
| Min Capacity (Diameter) | 12 mm |
| Max Bend Radius | Customized |
| Production Rate (90 deg Bends/hr) | 200 |
| Type | Electric |
| Operation Mode | Semi Automatic |
| Pipe Diameter | 50 mm |
| Layout | Horizontal |
| Motor Power | 3 HP |
| Bending Direction | Clockwise |
| Model Name/Number | SE 75 |

Equipment Image



Working:

- The pipe bending machine, SE 75, is a semi automatic electric device designed for bending iron pipes with a diameter ranging from 12 mm to a maximum of 45 mm and a thickness of up to 3 mm.
- Operating in a horizontal layout, the machine features a customized maximum bend radius to accommodate diverse bending requirements.
- With a motor power of 3 HP, the machine facilitates a clockwise bending direction, ensuring precision and control in the bending process.
- The production rate is impressive, capable of achieving 200 90 degree bends per hour, making it suitable for efficient and high volume pipe bending tasks.
- Retrieve the bent pipes from the horizontal layout once the bending process is completed.

Applications:

- Pipe bending machines are crucial across various industries:
- Construction :** Used for shaping pipes to create frames, supports, and trusses.
- Automotive :** Employed for forming components like exhaust systems and roll cages.
- Aerospace :** Utilized for shaping tubing in aircraft structures and hydraulic systems.
- Architectural :** Create curved elements for railings, balustrades, and other features.
- Industrial Fabrication :** Applied in sectors such as oil and gas, power plants, shipbuilding, HVAC systems, and medical equipment for precise pipe bends.

PCB LAB

(CONVERTING CONCEPT INTO MVP/PRODUCT)



CHAMBER OVEN

A chamber oven is a thermal processing device designed for tasks like drying, curing, and annealing. With a controlled and enclosed chamber, these ovens offer precise temperature and atmosphere control, making them essential in industries such as manufacturing, research, and healthcare. Their versatility stems from programmable controls, enabling uniform heating for various materials and applications. The chamber oven's efficiency and reliability make it a crucial tool for achieving consistent and controlled thermal treatments.

Specifications:

| | |
|-------------------|--|
| Temperature Range | Ambient to 150°C / 250°C / 400°C / 500°C |
| Air Circulation | Vertical, Horizontal, or Combination. High Volume and High Velocity Airflow for double air changes. |
| Timer | Digital Pre Settable with a range up to 999 minutes/seconds |
| Paint | Enamel Paint / Epoxy Coating / Powder Coated |
| Power Supply | 230 Volts Single Phase 50Hz/60Hz or 415 Volts 3 Phase 50Hz/60Hz |
| Heating Elements | Low wattage Incoloy sheathed heating elements / SS Tubular |
| Insulation | Ceramic Wool / Mineral Wool |
| Door Gasket | Fibre Glass Rope (High Temp) / Silicon Gasket |
| Shelves/Trays | Made out of angles with wire knitted mesh or perforated sheet suitable for oven internal size |
| Exhaust | Manual or Automatic. Automatic forced exhaust system with fresh air inlet. Manually adjustable damper. |
| Heating Media | Electric / Gas / Diesel / Steam / Thermic OIL, etc. |

Equipment Image



Working:

- Chamber ovens precisely regulate internal temperatures using heating elements and controllers.
- These ovens ensure even distribution of heat throughout the enclosed space, preventing hotspots.
- Some models control humidity or gas composition, crucial for specific thermal processes.
- Many chamber ovens offer programmable controls, enhancing flexibility for diverse thermal processing needs.

Applications:

- Chamber ovens are essential for heat treatment in manufacturing materials like metals, plastics, and ceramics.
- Crucial in electronics manufacturing, chamber ovens provide controlled heating for soldering, curing, and testing electronic components.

PCB HAL MACHINE

PCB HAL Machine Used for Solder Plating for PCB. Total Interior is made of Stainless Steel. This machine is useful for small to medium volume industry & prototype. HAL 080 Micro Processor Controlled Automated. The system allows processing of board up to 3.2 mm.Thick & Hole size 0.5 mm Diameter.

The HAL process creates a solder on all pads. The entire panel is immersed in liquid solder and is removed from the solder through hot compressed air. Excess solder (which did not bind with exposed copper) is blown away and the copper pads and holes are left plated.

Specifications:

| | |
|----------------------|-------------------|
| PCB Size | 200 x 300 mm |
| Size | 850 X640 X1550 mm |
| Electrical Supply | 3 Phase |
| Power Supply | 6.5 kW |
| Voltage Supply | 440 V |
| Material | Stainless Steel |
| Solder Tank Capacity | 80 Kg |
| Heating Time | About 1.2 hrs |
| Exhaust | 120 mm Duct |
| Machine Capacity | 75 Kg for Solder |
| Design | Customized |
| Model Name/Number | HM 3040 |

Equipment Image



Working:

- PCB (Printed Circuit Board) HAL (Hot Air Levelling) machines receive bare PCBs with solder paste applied.
- The PCBs are preheated to a specific temperature to ensure uniform solder paste distribution.
- The PCB is passed through a hot air levelling chamber where molten solder creates a smooth and even coating on exposed copper surfaces.
- After hot air levelling, the PCB is cooled to solidify the solder and establish reliable electrical connections.
- The final step involves inspecting the PCB for quality, ensuring a proper solder coating and conformity to design specifications.

Applications:

- Automotive Electronics
- Medical Devices
- Aerospace and Defense
- Consumer Electronics

PCB PLATING LINE

A plating line is a series of tanks and equipment used to coat a metal surface with another metal. The specific metals used and the steps involved in the process will vary depending on the type of plating being done.

Specifications:

| | |
|--|----------------------------------|
| Max PCB Size | 250mm x 305mm |
| Plating Tanks | 14 Nos, 350mm x 100mm x 300mm |
| Copper 1 & Tin Tanks 1 | L 300mm x W 400mm x H 300mm |
| Rings 1 & H ₂ SO ₄ Tanks | L 300mm x W 100mm x H 300mm |
| Heater | 1 nos. (CC50 Tanks 1 Nos.) |
| Air Agitation | for copper plating tank |
| Thickness | 12mm, 10mm, & m |
| Capacity | 500 1000 L |
| Storage Material | Chemicals/Oils |
| Electrical Connection | 230 V 50HZ, 15 A Socket required |
| Power Consumption | 500W |
| Materials | Polypropylene |
| Temperature Range | Up to 100 Degree C |

Equipment Image



Working:

- Initial cleaning of PCBs removes contaminants, preparing the surface for subsequent plating.
- Selective removal of unwanted copper defines circuit traces, readying the PCB for the plating process.
- Chemical activation sensitizes copper surfaces, promoting adhesion for effective electroplating.
- Submerging PCBs in a metal salt solution and applying electric current deposits a thin, even metal layer.
- Rinsing, chemical treatments, and quality control ensure the final plated layer meets specifications for optimal performance.

Applications:

- Copper Plating
- Solder Mask Plating
- Nickel Plating
- Tin Plating
- Multilayer PCB Production

PCB PROTOTYPING MACHINE

A PCB prototyping machine is a specialized device that automates the rapid and precise production of prototype printed circuit boards (PCBs), facilitating quick iteration and testing of electronic designs, ultimately reducing development time and costs.

Specifications:

| | |
|-----------------------------|--|
| Working Area (X/Y/Z) | 280 280 20mm |
| Driving Units X/Y/Z axis | Hybrid Stepper Motor |
| Spindle Motor | 500W, 11000 RPM |
| Maximum Operating Speed | 4000mm / m in |
| Engraving Speed | 3000mm / m in |
| Repeat Positioning Accuracy | 0.05mm |
| Spindle Collet Type | 1/8 inch, 3.175mm |
| Operating Format | G Code or MACH 3 support file format |
| Controller | 4 AXIS CNC controller with spindle speed control, Limit Switch control and Depth control input |
| Software | MACH 3, USB CNC Control Software and CopperCAM |
| Dimension | 625 510 410mm |
| Computer Interface | Onboard Parallel Port (Preferred) or USB Port |
| Operating Voltage | 220V / 50Hz / 500 W |
| Weight | 30Kg |
| Material | PVC, PCB, Acrylic, Wood, MDF Board, Non Ferrous Metal |

Equipment Image



Working:

- PCB prototyping machines convert electronic circuit designs into physical layouts on prepared copper clad boards.
- These machines cut and clean boards in readiness for circuit imaging.
- Photoetching transfers the design onto the board, defining conductive pathways, and after chemical etching, components are placed and soldered, completing the transformation into a functional electronic device.

Applications:

- PCB prototyping machines are essential for rapidly iterating and testing electronic designs during the product development phase.
- These machines find applications in educational settings for teaching electronics and allowing students to create and test their circuit designs.

REFLOW OVEN

IN12 is a newly designed and manufactured reflow oven by NeoDen Tech. It has 12 temperature zones, unique heating module design, intelligent control system, built in soldering smoke filtering system, which makes it intelligent, innovative, compact and high performance.

Specifications:

| Specification | Value |
|------------------------|--|
| Heating Zones | Upper: 6 / Down: 6 |
| Cooling Fans | Upper: 4 |
| Controller | VGUS Microcomputer |
| Transmission | Mesh Chain Drive |
| Heating Type | Nichrome Wire & Aluminum Alloy Heating |
| Conveyor Speed | 50 ~ 600 mm/min |
| Temperature Range | Room temperature ~ 300°C |
| Temperature Accuracy | 1°C |
| PCB Temp Deviation | ±2°C |
| Max Soldering Width | 350mm |
| Process Chamber Length | 1354mm |
| Heat up Time | 30 min |
| Max Soldering Height | 35mm (includes PCB thickness) |
| Operation Direction | Left→Right |
| Electricity Supply | AC 220v/single phase |
| Starting Power | 2.4kw ~ 4.8kw (adjustable) |
| Typical Working Power | Approx. 2kw (1.5mm fiberglass PCB) |
| Machine Size | L2300mm × W650mm × H1280 mm |
| Packing Size | L2420mm × W730mm × H1430 mm |
| Net Weight | 300KGS |
| Gross Weight | 383KGS |

Equipment Image



Working:

- Switch on the machine, ensure emergency features work before starting.
- Set chain speed, adjust temperatures, and re test for optimal reflow conditions.
- Enter desired heating zone temperatures, and initiate heating upon configuration.
- Save soldering formulas with file names, load or modify as needed.
- Adjust fan speeds, select solder paste, and analyze temperature curve for efficient soldering.

Applications:

- Used for soldering components onto PCBs in SMT assembly processes.
- Ideal for small scale and prototype production of electronic devices.
- Applied in manufacturing control systems and industrial electronics.

ROLLER TINNING MACHINE

A roller tinning machine is a piece of equipment used to apply a thin coating of tin to metal surfaces. It is commonly used in the electronics industry to tin the leads of printed circuit boards (PCBs) before they are assembled.

Specifications:

| | |
|------------------------------------|--|
| Maximum Board Size | 300 mm |
| Machine Size | 600 mm x 300 mm x 200 mm |
| Machine Fabrication | SS 304 Sheet with powder coating |
| Maximum Board Thickness | 0.3 ~ 5 mm |
| Special Geared Motor with DC Drive | Revolution Technology 40 watt, 180 VDC, Variable Speed |
| Heater Capacity | 1.5 K Watt |
| Digital Temperature Controller | 0 ~ 400 DC |
| Supply Voltage | 230 VAC, 1 Phase |
| Floor Space | 600 mm x 200 mm |

Equipment Image



Applications:

- Tinning the leads of PCBs
- Tinning of Metal Strips
- Tinning Wires and cables
- Tinning cans and other containers
- Decorative tinning
- Reflective Coatings
- Reflow Soldering

Working:

- Loading the PCB: The printed circuit board (PCB) is placed on the conveyor belt.
- Fluxing: The PCB passes through a flux wave, which coats the copper pads with a thin layer of flux. The flux helps the solder to adhere to the copper.
- Tinning: The PCB passes between a pair of rollers that are coated with molten solder. The solder is applied to the copper pads on the PCB.
- Cooling: The PCB passes through a cooling zone, which helps to solidify the solder.
- Unloading: The finished PCB is removed from the conveyor belt.

SMD PICK & PLACE MACHINE

The Neoden4 is an advanced SMD (Surface Mount Device) pick and place machine designed for efficient and precise electronic component assembly on printed circuit boards (PCBs).

Specifications:

| Technical Parameter | Value |
|----------------------------|--|
| Placement Capacity | 5000CPH (vision off), 3500CPH (vision on) |
| Applicable Component | Min 0201, Max 30 30mm IC, BGA, QFN |
| Automatic Electric Feeders | Maximum 48 Sets |
| Equipment Weight | 80Kg |
| Placement Accuracy | ±0.02mm (Repeatable Positioning Precision) |
| Applicable PCB Size | 290mm1200mm / 290mm400mm |
| Power Supply | 220V / 160W |
| External Dimension (LxWxH) | 600x850x460mm |

Applications:

- Neoden N4 automates SMD placement, enhancing production efficiency.
- Used in assembly of devices like smartphones and tablets.
- Used for precise and repeatable component placement in R&D labs.
- Provides precise placement for reliable operation in industrial electronics.

Equipment Image



Working:

- Power on the machine and perform initial calibration for accuracy.
- Load electronic components into feeders and the target PCB onto the machine.
- Input placement program, align the vision system, and recognize automatic feeders.
- Utilize the automated system for precise pick and place of components on the PCB.
- Conduct quality inspections, unload the assembled PCB, and power off the machine upon completion.

DARK ROOM



BATCH TYPE DEVELOPING MACHINE 24" X 24"

A Batch Type Developing Machine is a device employed in the chemical development process for printed circuit boards (PCBs). It facilitates the application of chemicals, specifically sodium carbonate, to develop PCBs efficiently.

Specifications:

| Specification | Details |
|---------------------|------------------|
| Measurement | 24" x 24" |
| Chemical Capacity | 40 Ltr |
| Chemical | Sodium Carbonate |
| Operational Control | ON / OFF Switch |
| Power Supply | 230v AC |
| Motor Power | 4 HP |
| Motor Speed | 1440 RPM |
| Power Consumption | 500 watts |
| Operating Voltage | 230v AC |
| Frequency | 50Hz |

Equipment Image



Working:

- Place the PCBs or the material to be developed into the machine, ensuring proper alignment within the 24" x 24" measurement.
- Introduce the chemical solution, specifically sodium carbonate, into the machine.
- Activate the electric on/off switch to power the machine.
- Start the 4 HP motor, which operates at 230v AC and 1440 RPM, driving the developing process.
- The chemical solution interacts with the PCBs, facilitating the development of the desired patterns.
- Deactivate the machine using the on/off switch once the development process is complete.
- Retrieve the developed PCBs from the machine.

Applications:

- PCB Manufacturing
- Electronics Industry
- Prototyping
- Small Scale Production
- Electronics Repair
- Industrial Automation

DOUBLE SIDED UV EXPOSURE UNIT

The Double Sided UV Exposure Unit is a robust machine designed for exposing printed circuits on PCBs. It features a built in vacuum pump and timer for efficient operation.

Specifications:

Equipment Image

| | |
|--------------------|---|
| Exposure Area | 250mm x 300mm (10" x 12") |
| UV Tubes | 2x4 (8 watts) actinic tubes |
| UV Wavelength | UV A range (around 365 nm) |
| Choke Type | Electronic |
| Timer | Electronic, 0-10 minutes (digital display) |
| Vacuum Strength | Built in vacuum pump (e.g., 15 kPa) |
| Material | Rugged and durable |
| Exposure Modes | Single and double sided exposure |
| Power Requirements | 110V/220V AC, 50/60Hz |
| Safety Features | Emergency stop buttons, protective enclosures |
| Dimensions | 300mm X 350mm X 400mm |
| Weight | 20Kg |



Working:

- Place the clean substrate (copper clad board) onto the machine's feed table.
- Align a roll or sheet of dry film photoresist on the substrate.
- Set parameters such as temperature and pressure on the control panel.
- Activate the machine to apply heat and pressure, bonding the dry film onto both sides of the substrate.
- Expose the laminated substrate to UV light through a photomask.
- Develop the substrate to remove the unexposed dry film, revealing the circuit pattern on both sides.

Applications:

- Printed Circuit Board (PCB) Production
- Multilayer PCBs
- Prototyping
- Electronic Device Manufacturing
- Research and Development

DRY FILM LAMINATOR

A Dry Film Laminator applies a protective dry film onto a substrate, like a copper clad board, in PCB manufacturing. This film shields the material during subsequent processes such as light exposure and chemical etching, ensuring precise circuit creation.

Specifications:

| | |
|-----------------------|-------------------------------|
| Dimensions | 1200 mm x 600 mm L x 750 mm H |
| Weight Capacity | 50Kg |
| Heater Capacity | 1.2 Kw |
| Max lamination Width | 300 mm (12') |
| Max. Panel Thickness | 0.3 to 5 mm |
| Electrical Supply | Single Phase 240V, 20 Amp |
| Temp. Ind' Controller | Digital ,0 to 150°C |
| Roller | Silicon Rubber(Hot Roller) |
| Pressure | Air Pressure |
| Conveyor Motor | 1/8 HP with DC Drive |

Equipment Image



Working:

- Place a clean substrate on the machine's feed table.
- Align and adjust a roll or sheet of dry film photoresist for temperature and pressure.
- Activate the laminator to apply heat and pressure, bonding the dry film uniformly onto the substrate.
- Expose the laminated substrate to UV light through a photomask.
- Develop the substrate to remove the unexposed dry film, revealing the circuit pattern.

Applications:

- Printed Circuit Board (PCB) Manufacturing
- Semiconductor Manufacturing
- Flex Circuit Manufacturing
- Membrane Switch Manufacturing
- Automotive Industry
- Medical Device Manufacturing

PCB ETCHING MACHINE

A PCB (Printed Circuit Board) etching machine is a device used to remove unwanted copper from a copper clad board, leaving behind the desired circuit pattern. Etching is a crucial step in the PCB manufacturing process, allowing for the creation of the conductive traces that form the circuit.

Specifications:

| Specification | Value |
|----------------|--|
| Materials | Frame: Stainless Steel Tank Polypropylene |
| PCB Size | 8 inches x 10 inches |
| Tank Capacity | 5 liters |
| Etching Method | Spray Etching |
| Timer | Adjustable from 0 to 30 minutes |
| Compatibility | Ferric Chloride and Ammonium Persulfate |
| Temperature | 20°C to 50°C |

Equipment Image



Applications:

- Electronics Manufacturing
- Consumer Electronics
- Automotive Electronics
- Communication Devices
- Medical Devices

Working:

1. Begin with a clean copper clad board, ensuring it's free from contaminants.
2. Coat the board with photosensitive resist and let it dry for a uniform layer.
3. Expose the board to UV light through a mask. Develop to reveal the copper pattern.
4. Immerse the board in an etching solution to remove exposed copper.
5. Rinse the board to stop etching. Neutralize and clean thoroughly.
6. Check for defects and confirm the board meets design specifications.

SCREEN EXPOSURE MACHINE

A Screen Exposure Machine is a device employing light to expose photosensitive materials, generating accurate patterns on surfaces for essential circuit production through subsequent development and etching processes.

Specifications:

| | |
|-------------------|------------------------------|
| Exposure Area | 250mm x 300mm (10" x 12") |
| Light Source | LED Tubes (4 Nos.) |
| Operation Control | On/Off Switch |
| Timer | 0-10 minutes |
| Power Supply | 110V/220V AC, 50/60Hz |
| Power Consumption | 500 Watts |

Equipment Image



Applications:

- Printed Circuit Board (PCB) Manufacturing
- Textile and Screen Printing
- Graphic Arts and Design
- Solar Panel Production
- Prototyping
- Medical Device Manufacturing
- Ceramic and Glass Etching
- Flexible Printed Electronics
- Microelectronics and Semiconductor Manufacturing

Working:

- Place the photosensitive material (e.g., emulsion coated screen or PCB) onto the exposure area of the machine.
- Adjust settings like the timer for how long the light will shine.
- Activate the machine to initiate the exposure process.
- The LED tubes emit light, exposing the photosensitive material to create a precise pattern based on the applied design or mask.
- Once the exposure time is complete, deactivate the machine.
- Carefully inspect the exposed material for accuracy and completeness of the pattern.

Do you have same questions in your mind? Then reach out to us.

- 1.What is the procedure for transforming my idea into a functional Printed Circuit Board (PCB)?
- 2.What is the process for creating a PCB?
- 3.Where can I find suitable facilities for manufacturing my custom PCB?
- 4.How do I go about designing and fabricating a custom PCB for my electronic device?
- 5.What are the recommended methods for prototyping my innovative product idea?
- 6.How can I go about constructing a prototype for my project?
- 7.Which service providers offer high precision 3D printing for prototyping?
- 8.Are there specific considerations or best practices for ensuring the success of my MVP development process?
- 9.What steps should I take to develop a minimum viable product (MVP) based on my concept?
- 10.Which online platforms or tools can assist in the collaborative design and development of electronic circuits?



For further queries

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