DELTASYS EFORMING™

TECHNOLOGY FOR NEXT GEN

Developer and Manuacturer of 3D Printing Machines and CNC Machining Centers

Hybrid Large Format Additive Manufacturing (LFAM) System

MSME NSIC ISO CE VOCAL FOR LOCAL MAKE IN INDIA

www.3deltasys.com

DELTASYS E-FORMING

invents, designs and builds specific high tech and high production 3D printing machines and CNC machining centres.

About us

We are Hardcore Manufacturers

We are not in the business of importing machines, we are hardcore manufacturers. Our in-house design, development, and manufacturing experience allow us to build a wide range of high-performance and industrial-grade 3D printers for our clientele. Our love for manufacturing and our intense passion to innovate, together with our cutting-edge technology, ensures that we are cut above the rest. We have expertise in creating a variety of 3D printing machines, including pellet extrusion 3D printers, hybrid pellet extrusion 3D printers fitted with a 5-axis CNC router to finish the components, resin-based 3D printers (DLP 3D printers) and concrete 3D printers in customisable sizes, capable of building four-storey structures. We also provide a comprehensive range of high-performance FDM printers. Additionally, in coming days we are expanding our portfolio by introducing Binder Jet System for Sand Printing.

Our Team

We have a team who is comprised of a devoted group of specialists that includes Machine designers, R&D personnel, Engineers, Electronic control system engineers, Software engineers, Quality engineers, and Fabrication experts, among other persons. Deltasys E-Forming's team is the ideal blend of young zeal combined with seasoned leadership. Professionals with 12-15 years of expertise in special purpose machine design, automation, and control system development carry the mantle of leadership. Moreover, the fresh perspective of our young engineers offers us an edge over the competition.

Facility

We have a 14000 square foot manufacturing facility in Belgaum, Karnataka, dedicated to the manufacture of our range of 3D printers. The facility is outfitted with CNC machines such as a CNC Vertical milling center, CNC Turning, CNC laser sheet cutting machine, and CNC Tube laser cutting machine. We also have a fully equipped Painting unit, which includes both powder coating and automotive painting. Our fabrication unit is led by professionals with a combined 20 years of expertise in welding, fabrication, and assembly

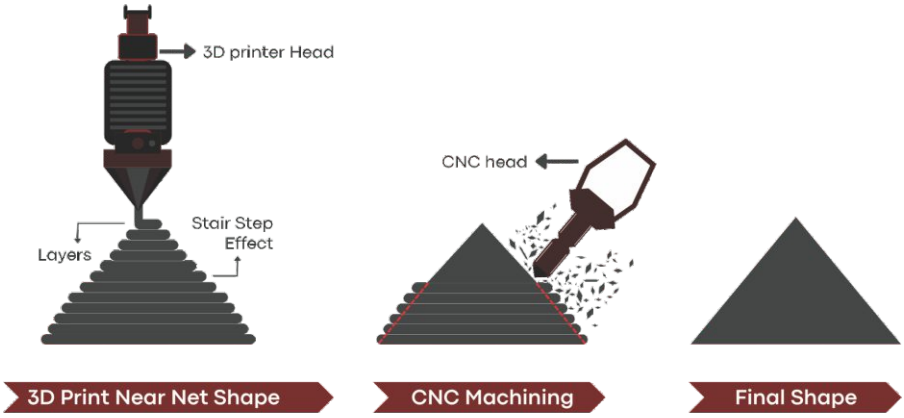
Spectrum of Services

- **Project Consultancy**
- **Pre Installation Support**
- **Onsite Installation**
- **Training**
- **Machine Optimization**
- **Preventing Maintenance Support**
- **Onsite Trouble Shooting**
- **Remote Assistance**
- **Component Repairing**
- **Spare Parts Support**
- **Your Satisfaction, Happiness and Growth**

DELTASYS E-FORMING Hybrid Large Format Additive Manufacturing

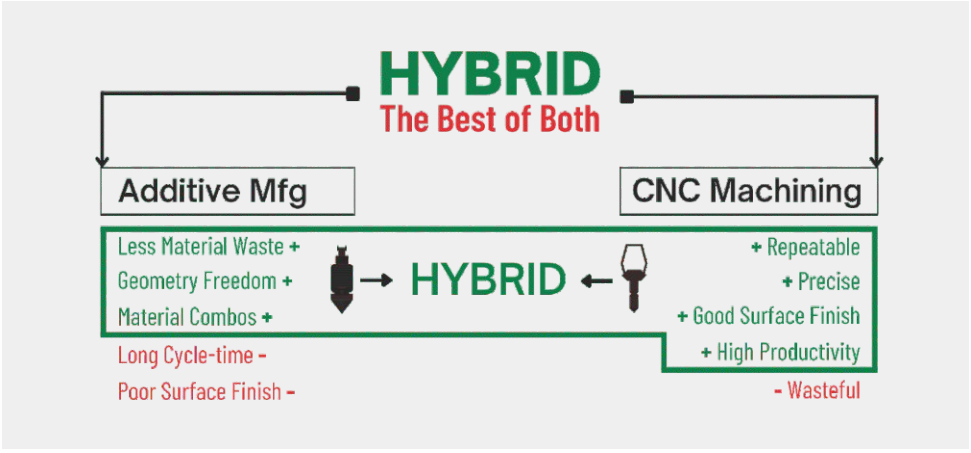
What is Hybrid Large Format Additive Manufacturing??

Hybrid LFAM uses the “Near Net Shape” approach to part production where the part is first printed at high speed slightly larger than needed, then trimmed to the final size and shape. This is the fastest, most efficient method of 3D printing large structures. With LFAM, both printing and trimming can be done on the same machine. LFAM can process parts from virtually any thermoplastic composite material including high temperature materials that are ideal for moulds and tooling that must operate at elevated temperatures.



LFAM’s printing system produces parts that are solid, fully fused, vacuum tight and virtually void free. LFAM is intended for serious industrial production. It is not a lab, evaluation or demonstration machine, but is instead a full-fledged industrial additive manufacturing system intended for the production of large scale components.

For more details on material
request datasheet Contact: **+91 80505 83644**



Advantage of Hybrid LFAM

Only LFAM cannot deliver the finish and tolerances which CNC Machining offers. On the other hand, traditionally parts have been made by machining an oversized blank, removing material to achieve the final net shape. Often more material is removed than remains. Near-net-shape additive manufacturing prints a part that is nearly the final size and shape then trims it to final dimensions. The amount of material removed is much less, resulting in faster processing, lower cost and more efficient use of material. It is an ideal approach for really large parts where alternate production methods may not be possible. With the proper choice of material, it may be possible to skip building a master and go directly from a computer design to printing a working mould, saving even more time and money. For industrial tooling, this direct digital, additive manufacturing approach is substantially faster and dramatically less expensive.

Application

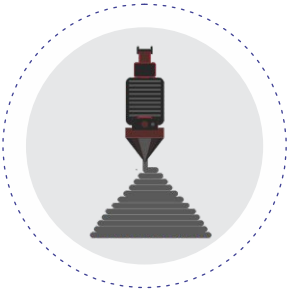
- **Tooling such as Mould and Patterns**
- **Sand casting patterns**
- **Composite Patterns and Moulds**
- **Packaging industry for custom packing**
- **Recreational vehicles**
- **Concrete moulds for construction**
- **Jigs and Fixture**
- **Electric vehicles**
- **Unmanned Aerial Vehicle (UAV)**
- **Furniture's**
- **Interior designing**
- **Wall panels**
- **Defense**
- **Aerospace**
- **Automotive**
- **Boat**
- **Railway**
- **Toolrooms**

The **Process**

Software

The process starts with a 3d computer model of the part. This design in an industry standard solid, surface or mesh file format, is loaded in to our print software. The 3d computer model is then used to generate a print and trim program which is used for printing and trimming

Printing



The printing process consists of heating (Carbon or Glass) fiber reinforced thermoplastic material until it is soft and pliable and then laying it down as a continuous bead layer by layer until the part shape has been generated. Each new layer fuses with existing layers to produce solid, strong, void free part.

The pelletized thermoplastic material is first dried to remove any moisture and then pneumatically conveyed to a vertically mounted print head. the print head heats the material to a softened state and meters the material at precise controlled rate through a print nozzle. This advanced print head design automatically coordinates with machine motion to maintain precise print bead dimensions, even at very high print rates.

Trimming

DE LFAM trimming is accomplished using three axis CNC Router mounted on separate gantry which rides on the same overhead rails as the print gantry (the 5axis trim head is available as optional, it depends on the customer's application & parts complex geometry). It uses 6kw 3000 to 24000 rpm manual tool change spindle. (Automatic tool change is optional with ten tools linear magazine).

Two separate Gantry
for milling and printing

AC Servo motors

High precision helical
rack and pinion

Low backlash, Noise less,
High precision gearbox

Heavy duty
structure

Chiller unit for
extruder cooling

Vacuum assisted Automatic raw
material feeding for extruder head

Hot air dryer for plastic
pellets to remove the moisture

Machine **Features**

High quality rack & pinion, LM guide, gear box

Effectively ensures printing, milling speed and accuracy

Machine frame and worktable adopts integrated welding made as standard large machine after stress relief annealing, machining on Plano miller and then the vibration aging treatment. These sequence of processing of frames makes it high strength, high precision and keep the normal use of 20 years without deformation.

Both gantries X and Y axis are equipped with A.C. servo motors and lightweight casted cross beam gives high precision, high speed, big torque inertia, performance stability and durability, guarantee the high speed and acceleration of the whole machine.

Types of **Heads**

	DE Xtrude25	DE Xtrude40	DE Xtrude60	DE Xtrude100
Extruder Output Kg/Hr (Polymer Dependant)	25	40	60	100
Cooling Zone At feeding zone	Yes	Yes	Yes	Yes
Heating zone	4Nos	4Nos	5Nos	5Nos
Automatic pellet feeding	Yes	Yes	Yes	Yes
Nozzles	6, 8, 10, 12mm	8, 12, 16, 20mm	10, 12, 16, 20, 25mm	16, 20, 25, 30mm
Servo driven with Gearbox	Yes	Yes	Yes	Yes

DE Xtrude high flow extruder heads

- Servo motor driven with high torque low backlash, noiseless high precision gearbox for precise output
- Bi-Metallic abrasion resistant screw and barrel to process composite pellets material
- Compact structure to reduce the payload of Z axis
- Water cooling at feeding zone with industrial chiller

Machine
Controller Interface

- DE Hybrid LFAM Comes with Powerful 3D print and CNC Controller.
- Temperature control of extruder zone is integrated so when you load the polymer profile all the parameters for that polymer including temperatures are set automatically.
- The control automatically synchronises output of the extruder to machine speed to ensure absolutely perfect bead dimensions regardless of machine speed, acceleration or deceleration.
- Operator can eye on the temperatures of extruder zones and print bed and adapt them on the fly.
- Move the print head along all axes, extrude, retract or just define your own custom controls.
- Start, stop or just pause your current print job, you are in full control at any time.
- Live machine working can be seen through web camera via smartphone machine web control.

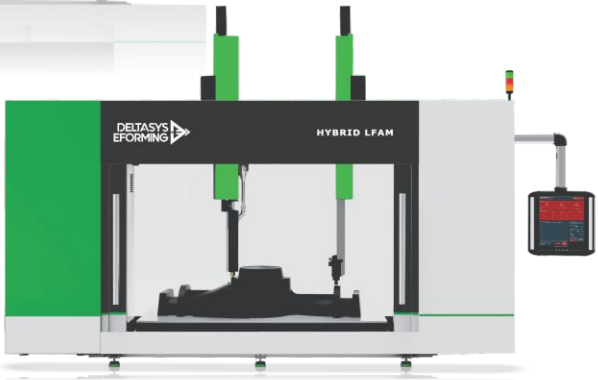
Materials

Our extruder print heads process wide range of polymers from high-performance Carbon fibre(CF) Reinforced pellets to commodity plastic reinforced with Glass fibre(GF) OR Natural fibre at DELTASYS E FORMING we are continuously testing materials together with our clients and material supplier.

Below is the list of material which we are testing currently.

- ABS with 20-30% Glass and Carbon fiber filled
- ASA with 20-30% Glass and Carbon fiber filled
- PC with 20%Glass and Carbon fiber filled
- PA6 with 20-40% Glass and Carbon fiber filled
- PETG with 15-20% Glass and Carbon fiber filled
- PEEK with 30% Carbon fiber filled
- PEI with 20% Carbon fiber filled
- PESU with 20% Carbon fiber filled
- PLA with 20% Natural Fiber filled
- PP with 20-30% Glass and Carbon fiber filled

Hybrid **Large Format**
Additive Manufacturing (LFAM) System



Available Build Volume: Standard

2400mm x 1200mm x 1000mm
3200mm x 2200mm x 1000mm
5000mm x 2500mm x 1500mm
6000mm x 3000mm x 2000mm

Different sizes available as per customer specifications
For more details check specifications

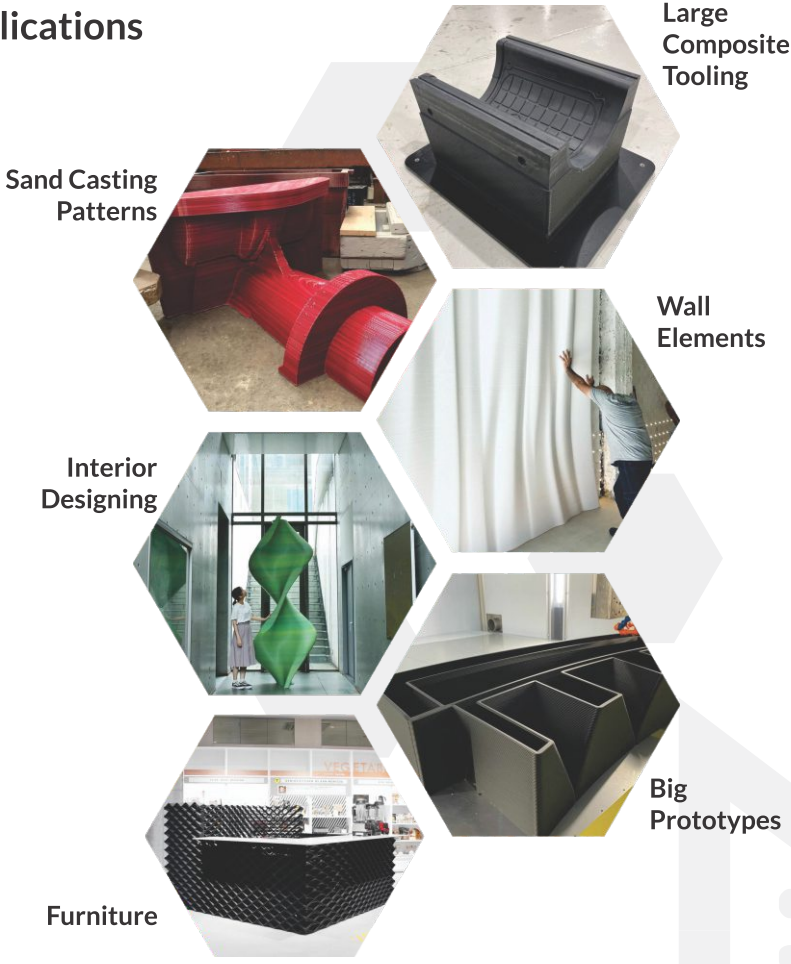
Specifications

DESCRIPTION	DE LFAM 48	DE LFAM 810	DE LFAM 816	DE LFAM 1020
Configuration	Dual Gantry, Fixed table	Dual Gantry, Fixed table	Dual gantry, High wall, fixed table	Dual gantry, High wall, fixed table
Table Size (Wide x deep)	2400mm x 1200mm Fixed	3200mm x 2200mm	5000mm x 2500mm	6000mm x 3000mm
Max print height	1000mm	1000mm	1500mm	2000mm
Operation	Sequential print and trim	Sequential print and trim	Simultaneous print and trim	Simultaneous print and trim
Available Print only	Yes	Yes	No	No
Available print heads	DE Xtrude25	DE Xtrude40	DE Xtrude60	DE Xtrude100
Max print rate (Kg/Hr) Polymer dependant	≈25	≈40	≈60	≈100
Max print temperature	450°C	450°C	450°C	450°C
Single hopper dryer	Standard	Standard	Optional	Optional
Dual hopper dryer	Optional	Optional	Standard	Standard
CNC Configuration	3axis (5axis optional)	3axis (5axis optional)	5axis	5axis
Spindle Power	6kw	6kw	6kw	6kw
Spindle Type	Air cooled	Air cooled	Air cooled	Air cooled
Spindle RPM	24,000	24,000	24,000	24,000
Spindle Taper	ER32	ER32	HSK F63/ISO30	HSK F63/ISO30
Tool Change	MTC (ATC Optional)	MTC (ATC Optional)	ATC	ATC
Lubrication	Automatic Centralised lubrication system	Automatic Centralised lubrication system	Automatic Centralised lubrication system	Automatic Centralised lubrication system
Gearbox	German Made	German Made	German Made	German Made
Motors	Servo motors	Servo motors	Servo motors	Servo motors
Drag Chain	Yes	Yes	Yes	Yes
Bellows	Yes	Yes	Yes	Yes
Stabiliser	Yes	Yes	Yes	Yes
Repeatability	0.05mm	0.05mm	0.05mm	0.05mm

Specifications

DESCRIPTION	DE LFAM 48	DE LFAM 810	DE LFAM 816	DE LFAM 1020
Positional Accuracy	0.4mm/2meter	0.6mm/3meter	0.6mm/3meter	0.6mm/3meter
Max Cutting feed	15000mm/Min	15000mm/Min	15000mm/Min	15000mm/Min
Rapid Traverse	20000mm/min	20000mm/min	20000mm/min	20000mm/min
Dust Collector	Yes	Yes	Yes	Yes

Applications



e-Maker
FDM 3D printer

Machine **Features**

- Heavy Duty welded Carbon Steel frame
- All custom made precision machined aluminium parts
- Custom made, precision machined (<50m precision across all area), aerospace grade aluminium heated (up to 1000C) build platform.
- Core XY tool path architecture with Original Linear Guide Rod System, high-end/high-torque Nema17 motors.
- DELTASYS CUSTOM extruder (Filament feeder) work with NEMA17 high torque motors.
- DELTASYS CUSTOM Single Hot end and can reach temperature up to 260 0C (Nozzles 0.4mm and 0.6mm).(available in dual head with high temperature to process the high performance material like PEEK, PEAK, PEKK, ULTEM.
- Powder coated external enclosure
- Sealed Glass Door.
- Equipped with HEPA and Carbon Filter
- Internal and Outer case is Powder coated.
- Smart, controllable cooling and ventilation system and LED lighting
- Proprietary electronics (32Bit Microprocessor with reliable stepper driver system that smoothen the motion and can run for 2weeks without stop) (We use all Industrial electronics component to function it reliably)
- 100% stand-alone machine with on-board 7inch Touch screen Display (image is shown below).
- Slicing Software: Cura, Slic3r (Perpetual in nature)

Additional **Features**

- Print resume function
- Automatic filament loading
- Print Resume Function
- Set and Forget Bed platform (Once it is levelled at the time of installation no need of level it again)

Material Support:

PLA, ABS, Nylon with Carbon fiber, PET G, HIPS (Can be modified for high performance materials like PEEK, PEAK, PPSU, PSU, PEI)

Specifications

	eMaker	eMaker400	eMaker600	eMaker 1000
Number of Heads	Single	Dual (Independent two extruder)	Dual (Independent two extruder)	Dual (Independent two extruder)
Build Volume	240mm x 240mm x 240mm	400mm x 400mm x 400mm	600mm x 600mm x 600mm	1000mm x 1000mm x 1000mm
Positional Accuracy	10μm XY accuracy/ 2.5μm Z accuracy	10μm XY accuracy/ 2.5μm Z accuracy	10μm XY accuracy/ 2.5μm Z accuracy	10μm XY accuracy / 2.5μm Z accuracy
Filament Diameter	1.75mm	1.75mm	3mm	3mm
XYZ Motion system	Belt driven with smooth rod	Belt driven with smooth rod	Ball screws and Guideways	Ball screws and Guideways
Bed platform temperature	120°C	120°C	120°C	100°C
Head Temperature	300°C	300°C	300°C	300°C
Power Supply	Heated Build Plate 200W Rest of Electronics 150W	Heated Build Plate 500W Rest of Electronics 150W	Heated Build Plate 600W Rest of Electronics 250W	Heated Build Plate1500W Rest of Electronics 300W

e-Builder
Small Concrete 3D Printer

The e-Builder Small is our entry level concrete 3d printer for everyone who wants to get hands on experience with 3D concrete printing. It is ideal for research institutes, universities or prefab concrete suppliers who want to do in house testing, prototyping or prefab production.

e-Builder Small is floor top robust, reliable and consistent working gantry style 3d printer. Suitable for Lab level environment. e-Builder is easy to operate, easy to program and user friendly than 5 axis robot system so end user only can focus on his project instead of spending his time on fine tuning and calibrating machine.

This machine prints all kinds of cementitious material such as

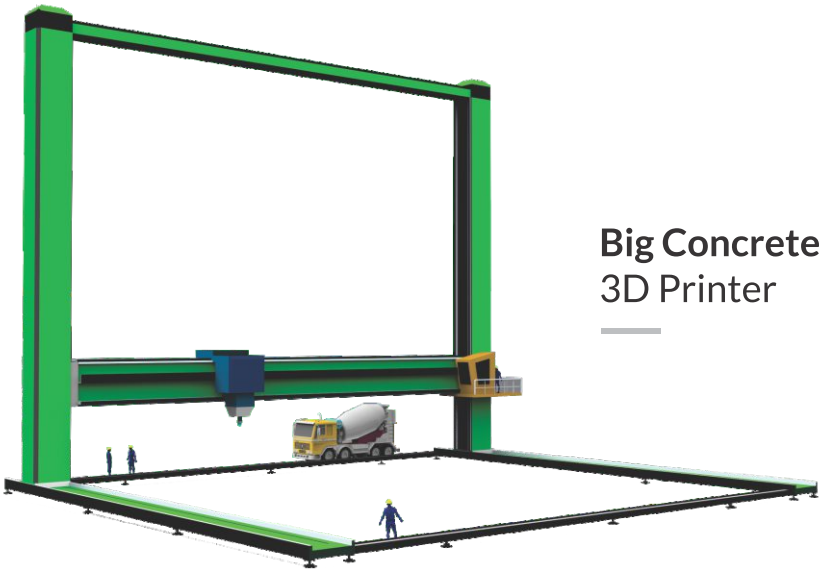
- Ordinary Portland Cement (OPC)
- Supplementary cementitious materials used in cement concrete
- Alternative cementitious materials
- Aggregates (used in cement concrete) having a maximum size of 8 mm
- Commonly used chemicals in cement concrete
- Commonly used fibres (secondary reinforcing materials) in cement concrete

Build Volume Available:

- 2m x 2m x 2m
- 5m x 5m x 3.5m
- 10m x 10m x 10m
  (available in all size as per customer requirement)

For more features contact:
+91 80505 83644

DELTASYS EFORMING



Big Concrete 3D Printer

Movable Crawling Robot

Concrete 3D printer
available in robotic configuration

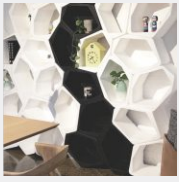
Applications

Public Structures

Coral Reef

Furniture

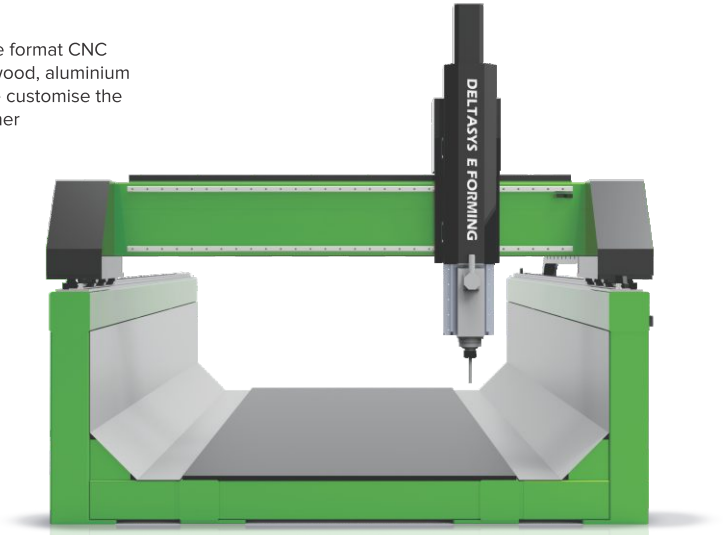
Home Building

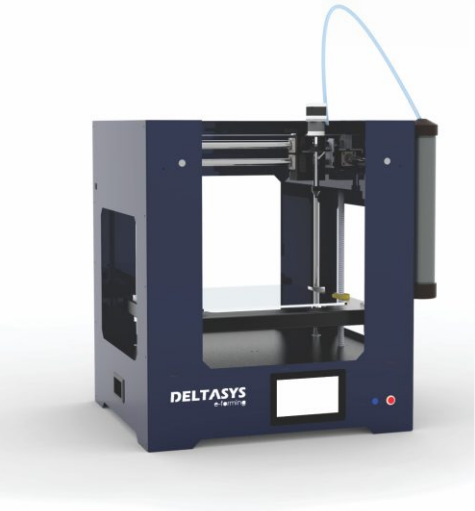


Interior Designing

CNC Router

We make small to large format CNC router for processing wood, aluminium and stone material. We customise the machine as per customer specifications.





Clay 3D Printer

Our small clay 3d printer which process terra cotta, porcelain, ceramic and all types of clay paste as well as cementitious pastes. This is highly suitable for artists, sculptor, hobbysits and researchers .

Available in custom sizes and custom head as per customer specifications.

DELTASYS EFORMING™
TECHNOLOGY FOR NEXT GEN

Factory: Plot No. 69,
Kapeel Founders Compound,
Udyambag, Belgaum, Karnataka, India, 590008

M: +91 80505 83644
E: info@3deltasys.com | enquiry@3deltasys.com
W: www.3deltasys.com