Admaflex 300

Combined Multi-Material and High Volume Mono-Material DLP 3D Printer

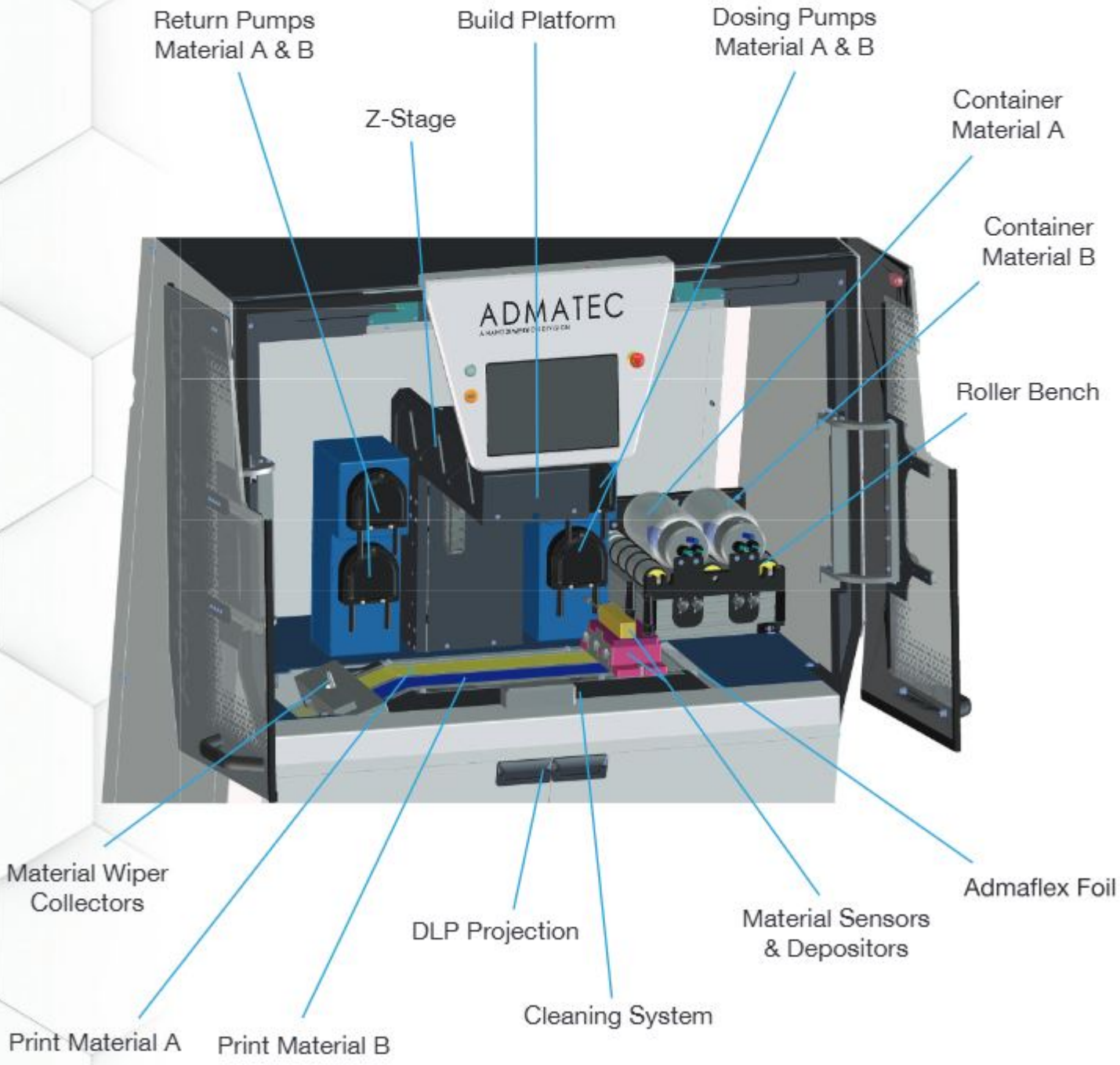
Ceramic and Metal 3D printer for Development and Production

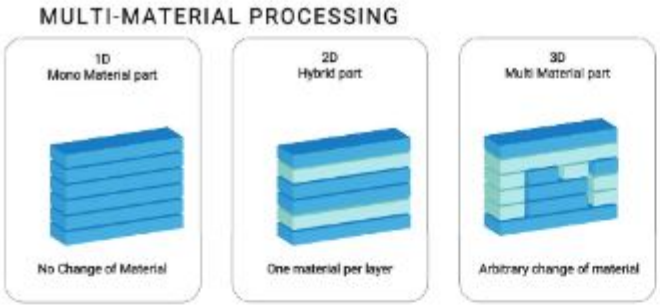
Phillips ADDITIVE | ADMATEC

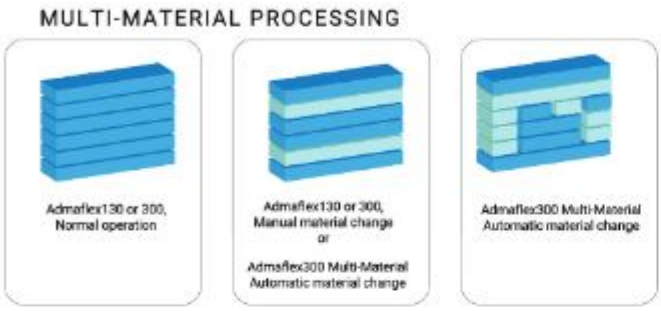
A NANODIMENSION DIVISION

Design and Function

The unique design and functions of the patented Admaflex Printing System for Multi-Materials







Featuring the unique capability 3D printing both advanced ceramics and metals, simultaneously on one machine.

The Admaflex 300 Multi-Material is ideal for demanding applications where material combinations such as ceramics and metals and polymers are required.

Features

Multi-Material Printing

The Admaflex300 Multi-Material printer allows for the production of parts containing combinations of ceramics, polymers and metals. The system allows an almost entirely free choice in development of multi-functional (co-sinterable) composites. You can think of combinations such as electrically conductive/insulating, dense/porous, transparent/opaque, magnetic/non-magnetic parts, bioinert/bioresorbable implants, or structures with tailored hardness/fracture toughness. Ceramics parts with polymer sacrificial support or metals parts with polymer sacrificial supports are possible as well. These combinations can be achieved within single layers, as well as between layers, providing a huge design freedom.

Benefits

- Developing multi-functional components
- Maximum flexibility towards choice of materials
- Ceramics with Metals
- Ceramics with Polymers
- Metals with Metals
- Metals with Polymers
- Almost free choice of grading

High Volume Mono-Material Printing

The Admaflex300 Multi-Material printer can be used as well with one single material, allowing a large projection area with high throughput. In mono-material setup, the machine can print ceramics, metals and polymers with a build volume up to 102x138x280 mm.

Benefits

- Big size production Mono-Material printer
- Build volume 102x138x280 mm
- High throughput
- Maximum configuration flexibility

Multi-Part Printing

A unique standard software feature is the “multi-part printing”, that enables you to control light exposure settings for each individual layer and for each individual STL file, speeding up your process development. For a faster Design of Experiments, it is possible to print many of the same products but all with different exposure energy (LED power and/or exposure time). This feature is very helpful if you wish to use the overexposure to control tolerances smaller than the pixel resolution.

Benefits

- Faster process optimization
- Fast material/feedstock development
- Multiple settings in one part or layer possible
- Multiple parts with different settings possible
- Optimized DoE studies in one single print job
- Accuracies smaller than the pixel size

In-Process Monitoring System

The vision-based, in-process quality monitoring system is an excellent feature for full traceability of the printing process. All relevant production data are stored with documented proof of the printing process. The monitoring system allows the user for example to partially stop adding layers to a defected part to allow the successful finalization of all remaining products. Real-time video capture and time-lapse recording are standard features of the monitoring system. When connected to your company network, via any laptop or desktop PC, you can have remote access to the machine and monitor the process real time.

Benefits

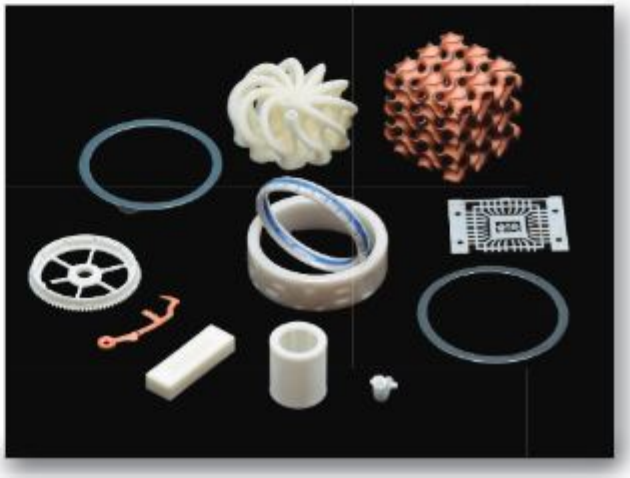
- Documented proof of the printing process
- Realtime process monitoring and process adjustment
- Increased throughput and efficiency
- Enhanced usability with remote access

Patented Printing System

The Admaflex 300 is designed to effectively handle materials with high viscosity, normally associated with ceramic and metal feedstock. The feedstock allows to work safely with very fine particles which are needed to achieve fully dense ceramic parts. The machine has an integrated high volume material handling system with automatic controlled dosing to enable 3D printing of large components (with net volume of more than 1,2 liter), without need to refill the material container. Our printing system is patented (US patent number 11,141,909) and this innovative system enables efficient feedstock management by reusing the excess material, resulting in virtually zero waste. With the bottom-up approach, the printed structure does not need to be surrounded by feedstock material; therefore the required feedstock volume is very low; only a few percent more than the volume of the printed structure itself. Also a very small amount of feedstock is sufficient to start printing, which makes the system ideal for research and 3D printing of precious materials.

Benefits

- A safe and clean workplace, no risk for dust
- Easy to use, easy to clean, no cross contamination
- Fully automatic, unattended 24/7 production of small and big parts
- Most efficient use of feedstock, cost efficient



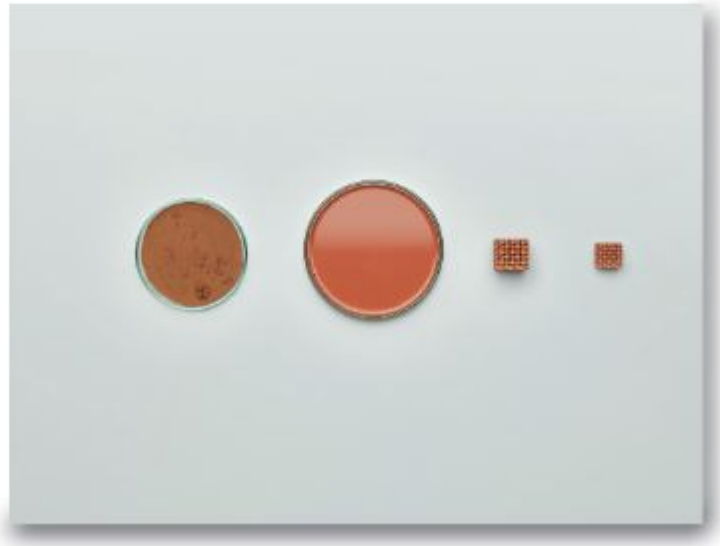
Modular Concept

The Admaflex 300 Multi-Material printer is designed with a modular concept, to accommodate all future developments. The system has an automated cleaning step between material changes, with option to integrate own processes, further expanding your range of capabilities. The machine is adjustable on customer requirements, such as integration in a robotized production environment. With help of software updates, users can benefit from the latest features and functionalities. The machines comes standard with a powerful light engine and can be configured with selectable resolutions and build volumes that meet your requirements.

Benefits

- Maximum flexibility, custom to your needs
- Adjustable resolution/build platform
- Best value for money, long term investment
- Upgradable for access to future developments

From powder to ceramic 3D printed and sintered part



From powder to metal 3D printed and sintered part

Easy Implementation

The Admaflex 300 comes standard on wheels for easy internal transport. Compressed air is not needed, just a regular electrical power supply is sufficient.
The ergonomic design allows excellent access and view for optimal usability. Via the standard Ethernet and USB connection, the STL file of the geometry can be loaded into the intuitive user interface. Upscaling, slicing, support generation, parameter selection is performed quickly and easily via the touchscreen. A separate PC with slicing software is not needed, saving license costs. After a half day training, setting up the machine, preparing a print job and starting the print typically takes less than 15 minutes.

Benefits

- Easy to place
- Easy to interface and connect
- Easy to learn and operate

Low Operating Costs

The machine has no wear parts and does not require a maintenance contract. All parts which are in contact with the feedstock are inexpensive consumables which can be easily cleaned or replaced by the user. Consumables and feedstocks are available at reasonable prices. This all results in a low cost of ownership and competitive prices of printed parts.

Benefits

- Low running costs
- Low maintenance costs
- Low cost per printed part

Specifications

Technology	Digital Light Processing (DLP), also known as Vat Photo Polymerization (VPP), or Stereo Lithography based Ceramic Manufacturing (LCM) and Stereo Lithography based Metal Manufacturing (LMM)
Printing Build Volume (X, Y, Z*) with Lateral (Pixel) Resolution when Printing Two Materials	102 x 64 x 280 mm | 4.01 x 2.51 x 11 inches (40 µm) 90 x 56 x 280 mm | 3.54 x 6.30 x 11 inches (35 µm) other resolutions available on request
Printing Build Volume (X, Y, Z*) with Lateral (Pixel) Resolution when Printing One Material	102 x 138 x 280 mm | 4.01 x 6.30 x 11 inches (40 µm) 90 x 138 x 280 mm | 3.54 x 3.50 x 11 inches (35 µm) other resolutions available on request
Light Engine Type	High power, high resolution WQXGA with 2560 x 1600 pixels
Layer Thickness	10 - 200 µm
Build Speed (layers/h)	up to 300 layers per hour
Build Speed (mm/h)	up to 60 mm per hour, depending on material type
Wall Thickness	0.1 mm to 10 mm in Al_2O_3
Machine Dimension (wxdxh)	1282 x 1000 x 1900 mm | 50.47 x 39.37 x 74.80 inches
Weight	Ca. 650 kg | 1433 lbs
Required Working Temperature	22 +/- 5°C
Required Working Humidity	< 40% (in standard configuration)
Connectivity	Ethernet, USB
Power Requirements	110 / 230 V
File Compatibility	SLC, STL
Final Product Density	Technical Ceramics > 98.5% - 99.8%* Metals > 96 - 99%* *depending on sintering curve

Specifications per October 2022 – subject to change

Options

Admatec delivers complete production lines consisting of 3D printing machines, cleaning equipment, and furnaces. Small and large furnaces, optimized for integrated debinding and sintering of oxide ceramics are available.

Next to the commercial available ceramic and metal printing materials, Admatec can offer material development with your ceramic or metal powders, tailored to your application. Contact us for more information.

About Admatec, Formatec, Nano Dimension

Admatec offers 3D printing machines, furnaces and printing materials for the highest demanding applications. Additive manufacturing is ideal for R&D, prototypes and smaller series, and of course for products which are impossible to shape with conventional technologies. Within Admatec, all expertise is available for printer development, production, software development and material development.

We share expertise in powder-based shaping and sintering technologies with our sister company Formatec, who started more than 25 years ago as a ceramic injection molding company. Currently Formatec offers product development all the way from prototype to manufacturing and end-of-life services, with shaping technologies like injection molding, 3D printing, green & hard machining and sintering, delivering ceramic and metal end-use parts.

Admatec and Formatec are part of Nano Dimension, who's vision is to transform the electronics and similar additive manufacturing sectors through the development and delivery of an environmentally friendly and economically efficient additive manufacturing, Industry 4.0 solution, while enabling a one-production-step-conversion of digital designs into functioning devices – on-demand, anytime, anywhere.

Together we serve customers in electronics, semiconductor, aviation, aerospace, medical implants, medical tools, dental, R&D, catalysis, refractories, nuclear, energy, chemical industry, investment casting, aesthetics, jewelry, opto-mechatronics, and many more.

Please contact us for more information!

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