Admaflex 130

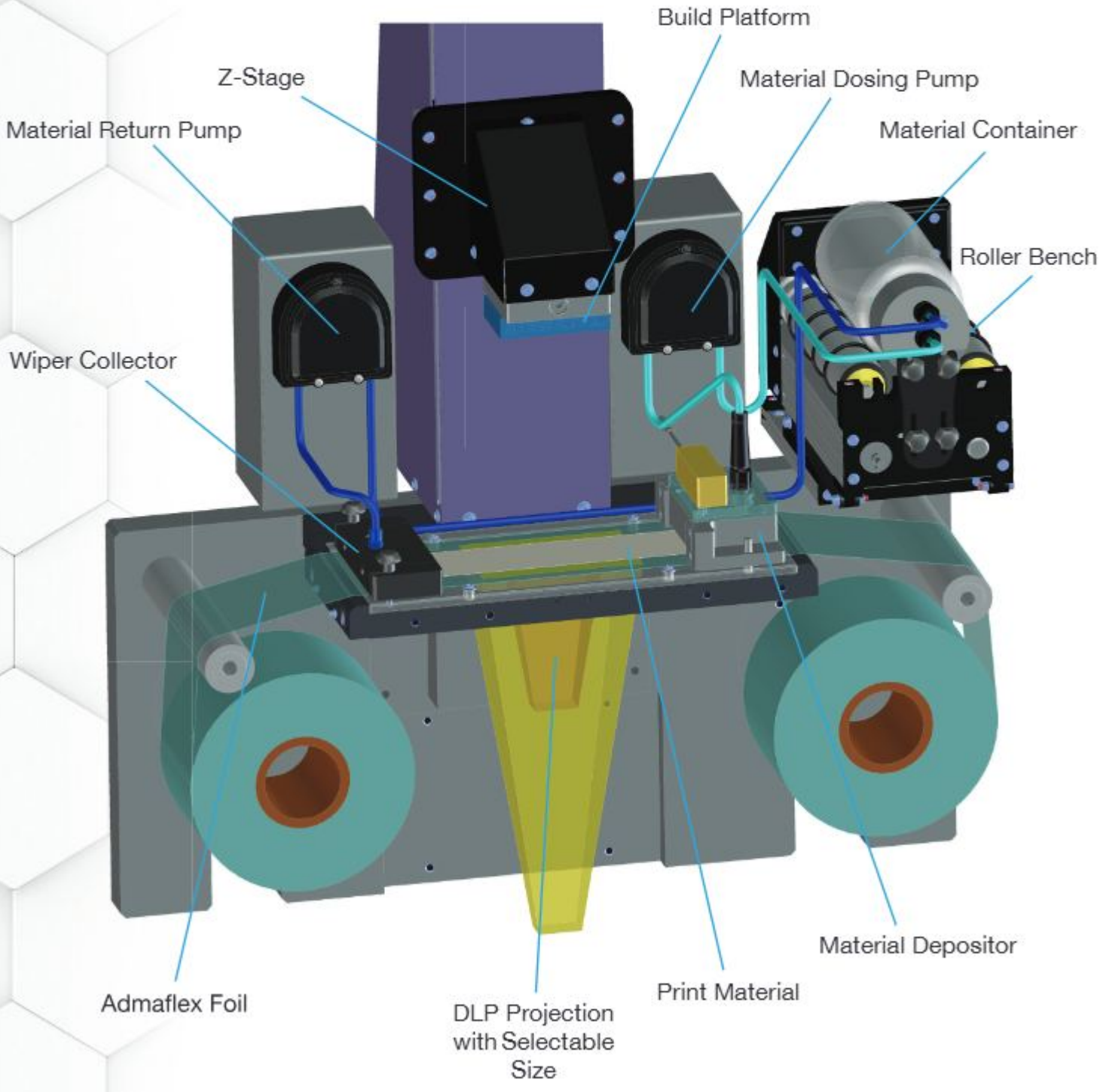
DLP 3D Printer

Ceramic and Metal 3D Printer
for Research and Development
and Industrial Serial Production

Phillips ADDITIVE | ADMATEC
A NANODIMENSION DIVISION

Design and Function

The unique design and functions of the patented Admaflex Printing Technology



A Proven Production Solution

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

The Admaflex technology has proven to be ideal for 24/7 digital serial production of functional parts with highest resolution, requiring complex geometries, fine details and smooth surfaces while benefiting from excellent material properties.

Features

Ceramics and Metals on One Machine

Admatec has developed a 3D printer with a unique printing system for making both ceramic and metal precision parts on one and the same printer. For printing higher density materials such as metals, an automatic feedstock mixing and dosing system is integrated. The mixing system keeps the material in motion, avoiding sedimentation. The Admaflex 130 3D printer is the world's first stereo lithography based 3D printer to print metals and ceramics in one platform.

Benefits

- Ceramic and metal printing on one single machine
- Fast and easy material switch without cross-contamination
- Maximum flexibility towards choice of materials

Lower 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

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

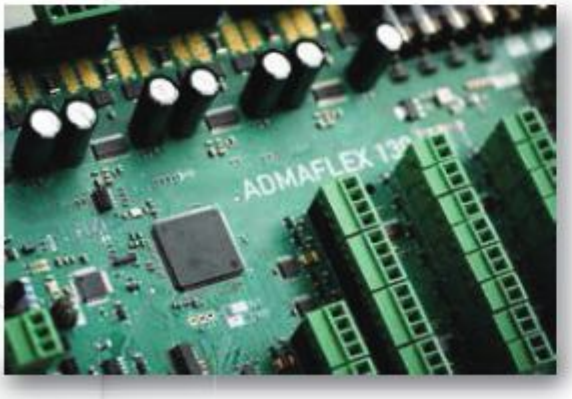
- Faster process optimization
- Fast material/feedstock development
- Multiple settings in one part or layer possible
- Multiple parts with different settings possible
- Optimized DoE studies in one single print job
- Accuracies smaller than the pixel size

Free Adjustable Printing Parameters

The Admaflex 130 is an open system that provides full control of the printing process. All parameters can be customized and optimized, before and during the printing process, even in one print and/or in part features. You simply change a parameter setting, press Pause and Continue, and the printer will continue with the new settings. The open software, in combination with excellent visibility of the printing process, is very helpful for fast and effective process optimization, within one print job, saving time and material. To support and speed up your own material development, Admatec provides proven resin premixes, for both ceramics and metals.

Benefits

- Full freedom of print parameters
- Unlimited research and development freedom
- Open for third party and own materials
- Save time and material with real-time process parameter adjustment
- Fast feedstock development with Admatec resin premix



Reliable High Productivity

With up to 300 printed layers per hour, the Admaflex 130 is the fastest and most efficient printer available on the market today. High production speeds are possible due to the smart feedstock supply system. Within a few seconds, a new layer of feedstock is tape casted below the build platform for adding the next layer. The foil protects the glass plate: no wear and reliable production. Layer thickness can be easily selected allowing extremely accurate layer definition or highest build speed up to 60 mm/hour in Z direction. Standard is a reliable high power WQXGA light engine, controlled and monitored by the software. Low release forces are possible by controlled peel off of the foil.

Benefits

- Proven technology for reliable industrial production
- Highest production speeds up to 300 printed layers per hour
- No wear or expensive spare parts
- Software control and reporting
- Scratch free high precision projection
- Lowest peel off force

In-Process Monitoring

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 130 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
- Start printing with less than 10 ml feedstock

Modular Concept

The Admaflex 130 printer is designed with a modular concept, to accommodate all future developments. The machine can be adjusted to 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 zero point clamping system of the build plate, allowing highly reproducible positioning and automatic zeroing. The standard powerful WQXGA light engine and can be configured with selectable resolutions and build volumes. Optional is the user-adjustable resolution/build platform, which allows you to select between extreme fine resolution and largest projection size, choosing the resolution and build volume that meets your current project requirement.

Benefits

- Maximum flexibility, custom to your needs
- Access to future upgrades and future developments
- Adjustable/selectable resolution/build platform for each task
- Best value for money, long term investment
- Optional user-adjustable resolution/build size

Easy Implementation

The Admaflex 130 comes standard on wheels and with a modest footprint, the machine fits through a regular door. With a machine weight of 300 kg, floor loads are usually no problem. Compressed air is not needed, just a regular electrical power supply is sufficient.
The ergonomical 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

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 (WQXGA light engine with 2560 x 1600 pixels)	64 x 40 x 400 mm | 2.51 x 1.57 x 15.7 inches (25 µm) 90 x 56 x 400 mm | 3.54 x 2.20 x 15.7 inches (35 µm) 102 x 64 x 400 mm | 4.01 x 2.51 x 15.7 inches (40 µm) 128 x 80 x 400 mm | 5.03 x 3.14 x 15.7 inches (50 µm) 160 x 100 x 400 mm | 6.30 x 3.94 x 15.7 inches (62.5 µm) *customer-specific build volumes and resolutions possible
Layer Thickness	10 - 200 µm, depending on material type
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
Material Container Volume	1200 ml
Build Platform Fixture	Zero-Point Clamping System
Machine Dimension (wxdxh)	980 x 670 x 1880 mm | 38.5 x 26.37 x 74 inches
Weight	Ca. 300 kg | 660 lbs
Required Working Temperature	22 +/- 5°C
Required Working Humidity	< 40% (in standard configuration)
Connectivity	Ethernet, USB
Power Requirements	110 / 230 V 6 A
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 turnkey 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.

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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