3D SYSTEMS

Hybrid Alignment

Combining subtractive and additive techniques with DMP Flex 350

Cost Effective Metal Parts

Combining subtractive and additive manufacturing techniques offers a cost-effective solution for producing metal 3D printed parts. This hybrid approach allows users to leverage the strengths of both methods, accommodating complex geometries that traditional machining alone cannot achieve. For example, certain parts may have sections that can be precisely machined, while other sections feature intricate geometries that only additive manufacturing can produce. By integrating these methods, manufacturers can optimize the production process, enhancing design flexibility and overall efficiency.

How does Hybrid Alignment Work?

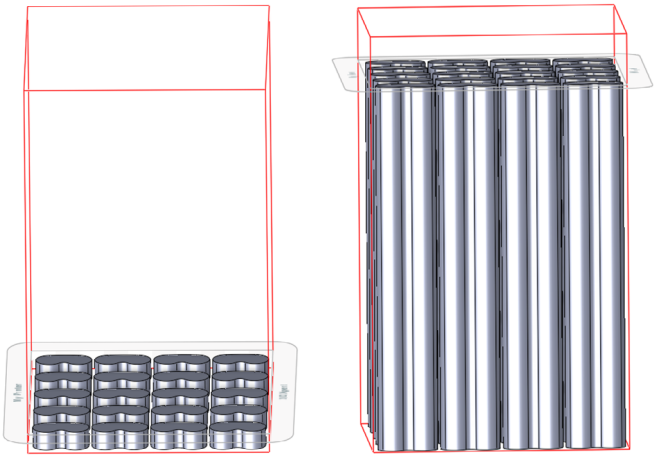
The manufacturing process begins with machining a substrate, which is then loaded into a fixture and placed in the DMP Flex 350. Within the DMP Flex 350, locating features on the substrate fixture are scanned, allowing the DMP meltpool software to precisely determine the substrate's actual location. This exact position is then integrated into the job file, achieving positional accuracy of up to 150 micrometers. This precise alignment ensures high-quality, accurate additive manufacturing, enhancing the overall reliability and performance of the production process.

Various methods of hybrid alignment can be used for different additive manufacturing applications: healthcare, industrial, even intermetallic applications can benefit from this technology.

3DXpert and Hybrid Alignment

Regardless of the substrate thickness, 3DXpert provides users with real-time information on the remaining Z-height available for printing. Since a base object consumes part of the printer's Z-axis capabilities, this feature is crucial not only for optimizing print capabilities but also for effective material tracking.

Additionally, 3DXpert allows for customizable substrates, enabling users to utilize nearly any geometry as a base, thereby enhancing flexibility and precision in the manufacturing process.



DMP Printers

DMP Flex 350 Dual and Factory 350 Dual, DMP Flex 350 Triple, and DMP Factory 500 are all capable of performing hybrid alignment and multi-material printing.

All of our DMP printers feature our signature vacuum chamber with industry-leading O_2 handling and an intuitive user interface with guided print cycles.

Reach out to our AIG team to learn how you can utilize Hybrid Alignment in your application!

DMP Printer Specifications

	DMP Flex 350 Series		DMP Factory 350 Series	
Laser power type	DMP Flex 350 Dual: 2 x 500W Fiber laser DMP Flex 350 Triple: 3 x 500W Fiber laser[1]		DMP Factory 350: 500W Fiber laser[1] DMP Factory 350 Dual: 2 x 500W Fiber laser[1]	
Dual Build volume (X x Y x Z) Height inclusive of build plate	275 x 275 x 420 mm (10.82 x 10.82 x 16.54 in)		275 x 275 x 420 mm (10.82 x 10.82 x 16.54 in)	
Triple Build volume (X x Y x Z) Height inclusive of build plate	275 x 275 x 420 mm (10.82 x 10.82 x 16.54 in) or	350 x 350 x 350 mm (13.78 x 13.78 x 13.78 in)		
Layer thickness	Adjustable, min. 5 µm, typical: 30, 60, 90 µm		Adjustable, min. 5 µm, typical: 30, 60, 90 µm	
Repeatability	Δx (3σ) = 60um, Δy (3σ) = 60um, Δz (3σ) = 60um		Δx (3σ) = 60um, Δy (3σ) = 60um, Δz (3σ) = 60um	
Minimum feature size	200 µm		200 µm	
Build Platform Heating	250 °C		250 °C	
Typical accuracy	± 0.1-0.2% with ± 100 µm minimum		± 0.1-0.2% with ± 100 µm minimum	
QUALITY CONTROL				
DMP Monitoring	Optional		Optional	
CONTROL SYSTEM AND SOFTWARE SUITE				
Software tool	3DXpert all-in-one software for metal AM		3DXpert all-in-one software for Metal AM	
Control Software	DMP software suite		DMP software suite	
POWDER MANAGEMENT				
Powder management	Optional external		Integrated	
METAL ALLOY OPTIONS				
DMP Flex 350 Dual / Factory 350 Dual metal alloy options:	LaserForm Ti Gr5 (A)[2] LaserForm Ti Gr23 (A)[2] LaserForm AlSi10Mg (A)[3] LaserForm AlSi7Mg0.6 (A)[3]	LaserForm 316L (A)[3] LaserForm CoCrF75 (A)[3] LaserFrom Maraging Steel (A)[3] Certified M789 (A)[3]	LaserForm Ti Gr5 (A)[2] LaserForm Ti Gr23 (A)[2] LaserForm AlSi10Mg (A)[3] LaserForm AlSi7Mg0.6 (A)[3]	LaserForm 316L (A)[3] LaserForm CoCrF75 (A)[3] Certified M789 (A)[3]
DMP Flex 350 Triple metal alloy choices with developed print parameters:	LaserForm AlSi10Mg (A) LaserForm AlSi7Mg0.6 (A) LaserForm Ni625 (A) LaserForm Ni718 (A)	Certified HX (A) Certified A6061-Ram2 (A) LaserForm 316L (A) CP1		

Other materials available upon request.

[1]Maximum laser power at powder layer is typical 450W for 500W lasers [2]Set up A [3]Set up B * Only for evaluation puroposes through AIG Services in the United States

What's Next? Contact our AIG Team to unlock the benefits of Hybrid Alignment!

Contact AIG

3D SYSTEMS

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3DS-10205E

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