KLOE: Dilase 650 for High resolution direct laser lithography; ARTICLE REVIEW: Powder removal. 
WHAT’S IN THE MEDIA? SLM 280 2.0; WHAT’S ON? CAMS 2018; WHAT’S IN MY INBOX? Stress

HIGH RESOLUTION DIRECT LASER LITHOGRAPHY - DILASE 650

Dilase 650 is the all-in-one direct laser writing equipment. This system, dedicated to photolithography, is a high-performance laser processing tool, offering access to the flexibility of a maskless technology, mainly suitable to speed up development and optimisation times required when dealing with new products range or prototyping.

Powered by very fast and accurate stages, Dilase 650 allows writing patterns in photosensitive resists deposited on planar substrates up to 6 inches diameter and mask blank up to 7 inches, by means of one or two continuous laser sources (375 or 405 nm).

Up to 2 different optical lines can be implemented on Dilase 650, giving the opportunity to use up to 2 different spot sizes and hence, to combine a high resolution head to create micron-scaled patterns and a wider sized spot to optimise writing times required to fill large surfaces.

Dilase 650 is fully compatible with most of the commercially available photoresists, such as SU8, Shipley and AZ resists. It is merely optimized for processing K-CL resins, developed by Kloé, to quickly achieve fine resolution and high aspect ratio microstructurations (1x50 and more) or microfluidic devices fabrication.

Features
- Size 1270 x 970 x 1650 mm
- Integrated computer control interfaces (Windows OS)
- 1 to 2 laser sources: 266, 375 and/or 405 nm
- 1 to 2 optical sub-assemblies
- High resolution video positioning system
- Data formats supported: LWI (Kloé Design format), DXF, GDS2
- Automated focus setting
- Integrated design software: Kloé Design V.2
- 2 modes of write: vectorial and raster scan

NEWS from Kloé in the south of France:

Distributors from around the world spent 3 days, from 20 June to 22 June 2018 at KLOE in Montpellier, France.

The Seminar allowed them to discover the new high-resolution lithography machine “Dilase 3D” and the new versions 4 and 6 of UV-KUB masking system range machines.

Likewise, KLOE’s team took them to visit a great part of the “Occitanie Region” in the south of France. These visits made the seminar even more pleasant!
ARTICLE REVIEW:
As providers of laser equipment Raymax Applications is well placed to see rapid change across industries as the latest laser technology is adopted. Adoption comes with challenges and the need for us all to remain informed. For this reason, please find a review of an important article with references provided below. I trust it is of assistance.

The challenges of metal powder removal: Managing risk, productivity and quality

As more 3D metal printing sites are established changing AM manufacturing processes aiming at series production of parts yielding benefits of efficiencies and design improvements, a challenge remains regarding metal powder removal.

In the Spring edition of METAL AM, Joseph Kowen offers significant insights into the challenges facing companies embarking on production of parts using 3D metal printing. But the key challenge he singles out is associated with handling of metal powders. Kowen lists the ‘pain points’ of AM part production as explosion risk, occupational health concerns, powder recovery, cleaning quality, and process repeatability.

The growth of this industry has seen the advent of self-regulation with companies designing and making 3D laser printers, themselves improving powder handling processes. For example, during the short life of the SLM Solutions Group, changes to powder handling and processing have been remarkable. Now a Powder Supply Unit automatically supplies fresh powder to a build then automatically returns excess powder to the supply tank requiring no human intervention. Any powder components that cannot be used are separated by the sieving unit, all safely contained in a controlled inert gas environment.

As the industry expands regulations surrounding procedures will emerge, not just regarding workplace practices, but the quality of the final product and the adequacy of post-processing. Already the Food and Drug Administration (FDA) in the US has issued guidelines for the production of titanium implants where powder removal of complex structures may not be straightforward.

Additionally, Kowen sites NASA’s requirements that will no doubt impact production of parts towards a form of standardization, requiring each step in the process to be clearly defined, including the all-important powder removal.

For those implementing 3D metal printing laser systems we would recommend a read of this important article, The challenges of metal powder removal: Managing risk, productivity and quality, found on page 113 of METAL AM – SPRING 2018

For those of you who would like to view the regulations issued by the FDA in 2017 we have placed a copy on our web site at: Technical Considerations for Additive Manufactured Medical Devices 2017.

Additionally, a transcript of a webinar in March 2018 updating those guidelines is also available at: FDA Webinar-Technical Considerations for Additive Manufactured Medical Devices January 2018.