

ELIMINATING BUILD AREA SIZE RESTRICTIONS: A VIDEO “SNEAK PEEK” AT DIS IN SCROLLING CONFIGURATION

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Direct Image Sintering (DIS), the world's first DLP/IR-based polymer PBF concept, [made headlines when unveiled](#) last year. Visitech's R&D team has proved the successful application of DIS in a scrolling motion system configuration – effectively eliminating build area size limitations.

The new proof-of-concept video shows an [LRS MCx NIR](#) light engine projecting the image, directly sintering the powder bed as it scrolls across it.

World's first – again

Build area size limitation based on resolution will be eliminated by applying scrolling systems, as fine resolution can be combined with scrolling projectors. Visitech's lab setup combines scrolling with a pitch resolution of 75 μm . Fully understanding potential issues and challenges that DLP-based light engines used for DIS PBF must overcome and simplifying processes to result in an easy to integrate plug-and-play system for customers is the ongoing challenge. Extensive knowledge from previously developed systems is useful, and at the R&D lab, exciting things are happening. Proving the DIS concept's successful operation in a scrolling motion stage configuration was another “world's first” achievement – as shown in the proof-of-concept video.

Direct Image Sintering explained

The DIS concept combines DLP and powerful IR laser diode arrays to substantially increase print speed, resolution, and build area size over traditional polymer powder bed fusion methods. Exposing the entire print layer in one shot is the critical driver of build speed. By applying Visitech's

scrolling subsystem, which can stack multiple, powerful IR light engines in a motion stage that scrolls them over a vast build area, DIS effectively removes established polymer-based PBF limitations. The DIS concept's ability to maintain high resolution across the build area opens a world of opportunities for innovative system builders seeking real mass production capabilities for their polymer powder bed fusion systems.

A constant exposure cycle further improves the reproducibility and consistency from layer to layer and significantly stabilizes the thermal management independent of the powder bed fill factor during print jobs. This is a challenge for legacy SLS systems, where fill factor variations affect the length of time needed by the laser beam to complete a layer.

Scrolling projectors for upsizing

A scrolling configuration can essentially be upsized to any desired build area. By proving the working DIS concept in a scrolling configuration, Visitech has effectively shown that build area size limitations will be a diminishing concern for future PBF applications, including traditional polymer sintering – and even polymer/metal compounds.

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