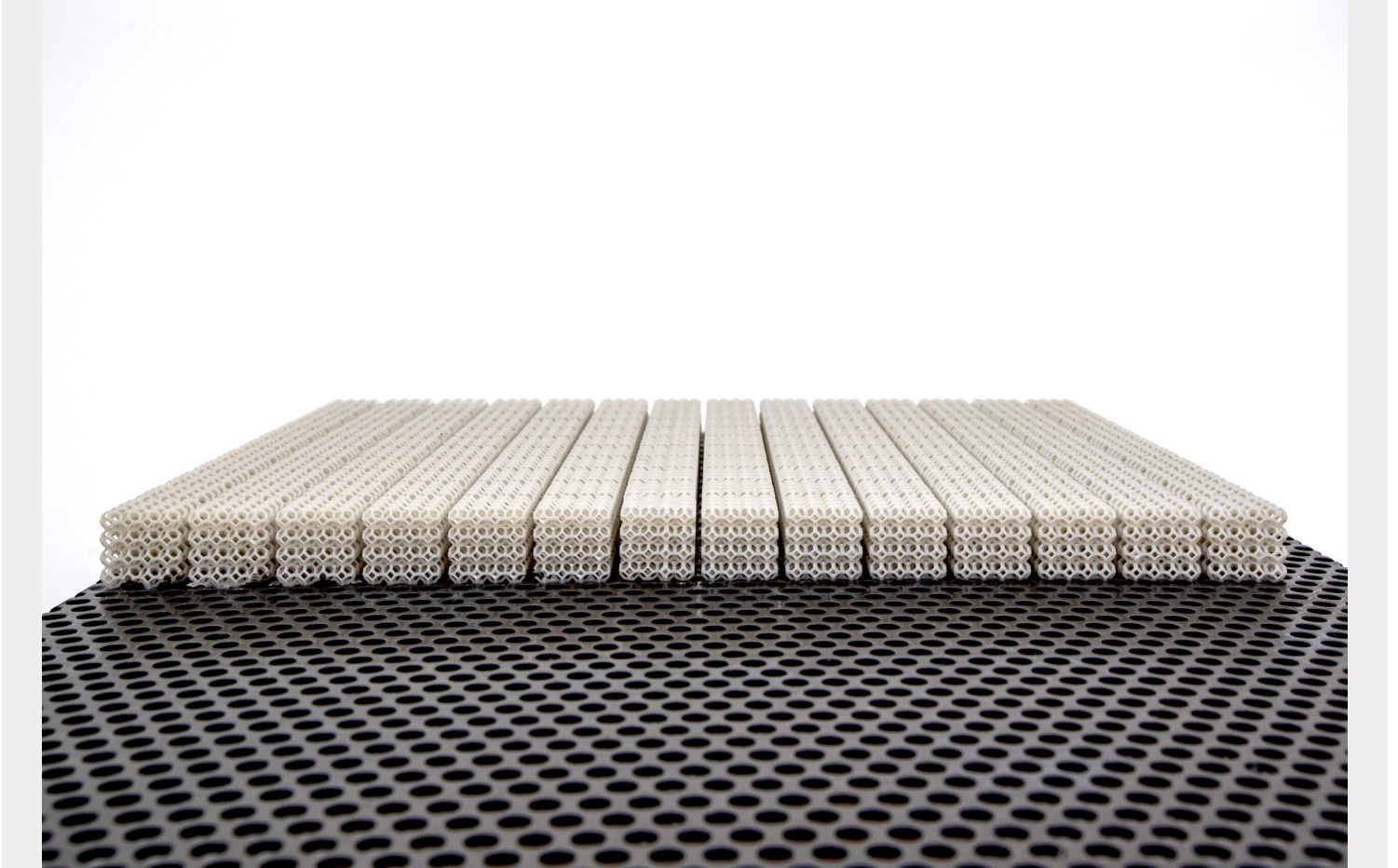
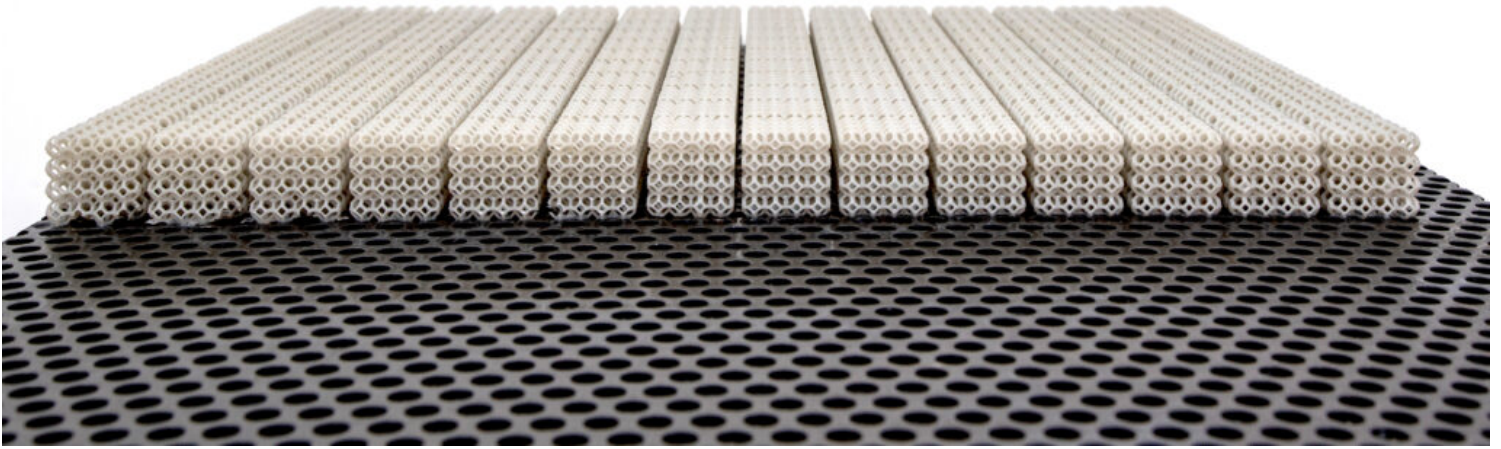


HIGH QUALITY VOLUME ADDITIVE MANUFACTURING: SCROLLING RAPID SYSTEM

Posted on January 7, 2021



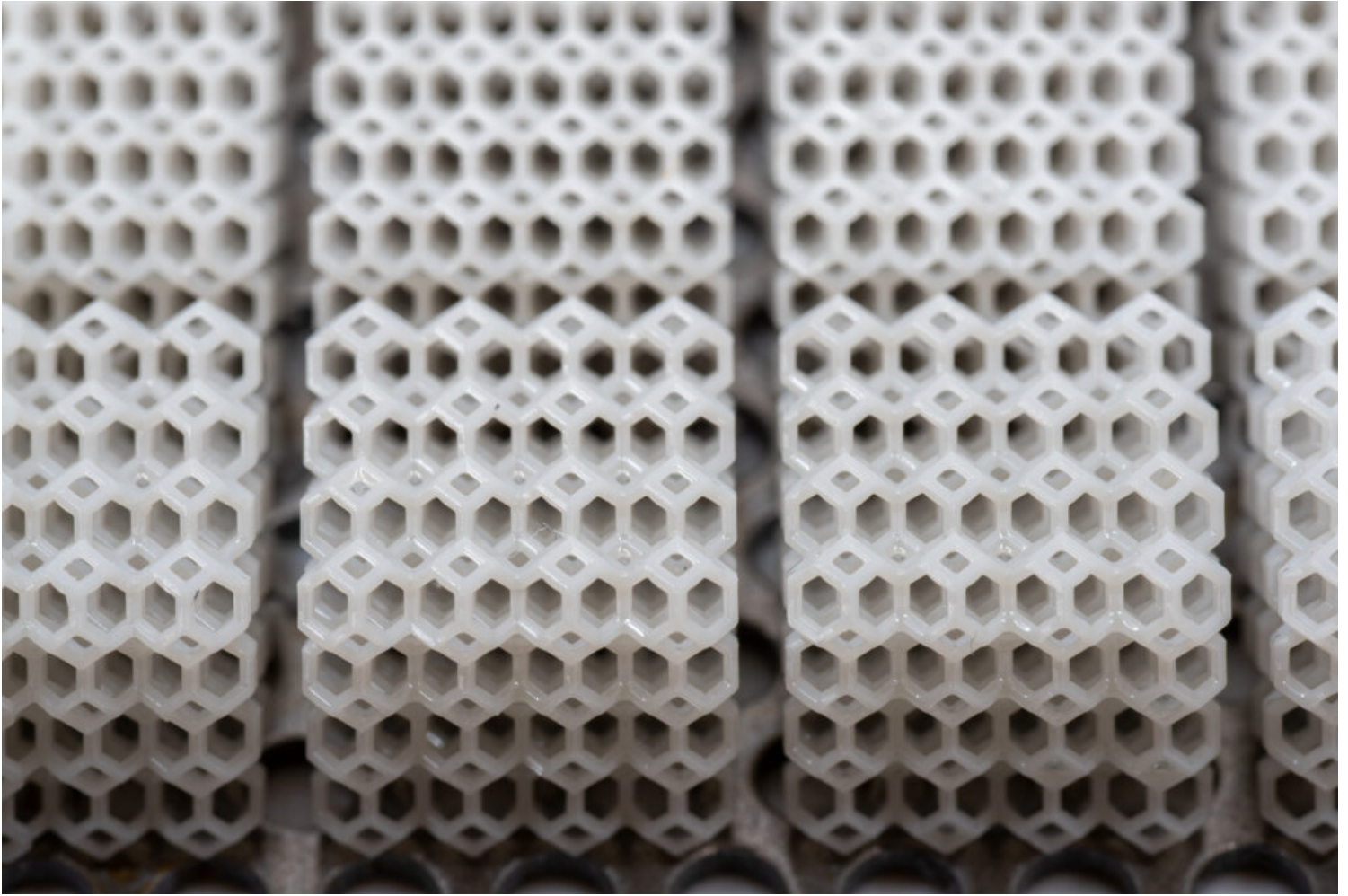


Additive Manufacturing enables the industry to revolutionize the value chain of products: from design to production, distribution, and aftermarket. The key weaknesses compared to traditional polymer production methods has been limitations in volume and size which largely has been limited to small print beds and limited resolution/range of movement of light sources - the light engines.

However: Visitech's groundbreaking technology enables the print bed to be virtually any size by allowing the light sources to move across the print bed creating high definition components on a industrial scale production level - a powerful tool for AM machine builders.

Visitech has re-thought how an AM machine prints by transferring our experience in PCB and Advanced Packaging manufacturing markets to Additive Manufacturing. Our scrolling LLS-series "photo heads" has enabled manufacturing of circuit boards where every nanometer count towards a flawless finished product. This is a technology where Visitech has a 10-year track record of delivering quality products. The key enablers of our dynamic light engines are a combination of our in-house R&D experience of tough mechanical & optical properties combined with our patented state-of-the-art software.

Our specialty lies in that we can align the project images in such a way that the resultant polymer will have no visual trace of being generated by two separate light engines- meaning that we can put several individual light engines next to each other and generate one image which blends flawlessly. Combining this with light engines that move - or "scroll" across the surface we enable high resolution parts across a virtually endless print bed.



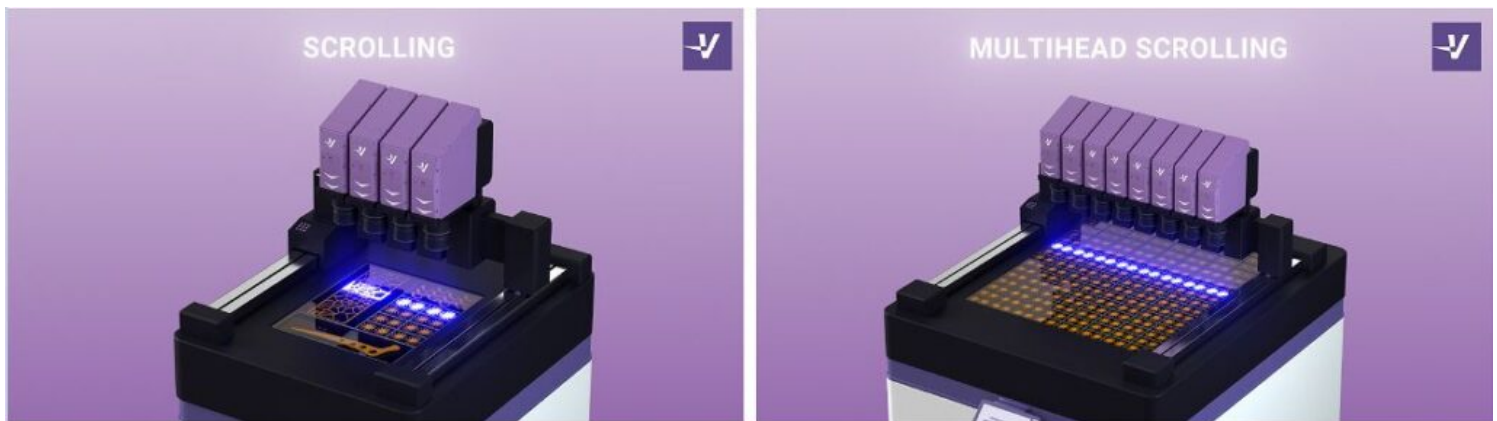
Imagine this accuracy on virtually any size print bed.

The "scrolling" light engines allows parts to be manufactured with high precision (50 μm) with a high output. The output is achieved two ways:

- The light engines move: A traditional static machine is limited by the resolution of the light source. The higher the resolution is needed on the print bed - the smaller the image. Alternatively the projector needs exceptionally high resolution (cost). The Dynamic Light Engines from Visitech solves with problem by allowing the heads to move across the print bed - combining the possibility of having high resolution and a large print bed.
- If an even larger print area is needed than what can be managed with one head alone, the Visitech LRS products can be stacked to achieve an even greater coverage of the print bed in one pass.

Visitech's light engines are developed to emit either UV light for UV sensitive resin type machines, or Infra-Red power source for Powder Bed Fusion type machines that would allow for AM of engineering polymers such as PEEK, PSU, or other polymers with high melting point. The light engines can be assembled as part of a Visitech "Motion Stage" that can be integrated into a larger AM Machine.

This means in summary that machine builders get an out-of-the-box light source hardware & software package that enables machine builds for either large item, or high-volume part manufacturing. The only limit is how physically space the AM machine has in its workshop.

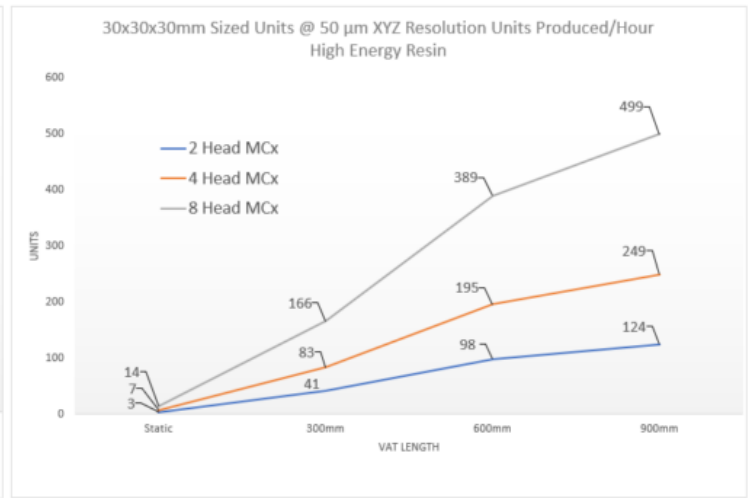
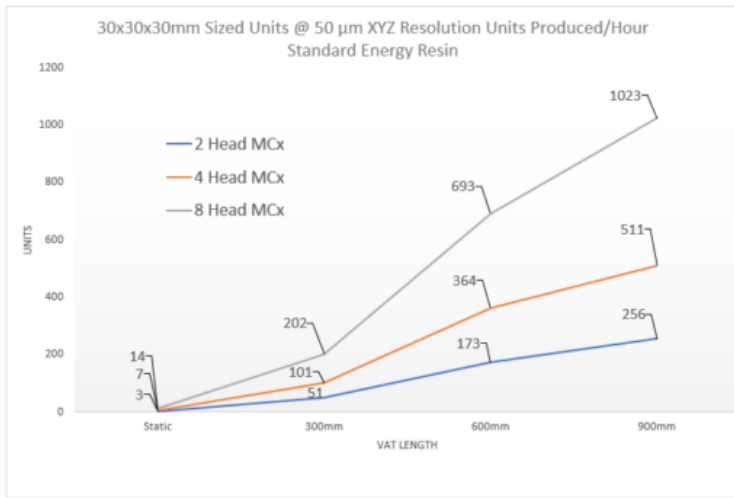


Below we have created an example of the throughput that can be reached where a 30x30x30 cube is produced by scrolling light engines with different configurations (4, 8, and 8 light engines) compared to a traditional static DLP machine with 4, 8, and 8 static heads. The example also takes into account a "high energy" resin and a "standard" resin.

As seen in the graph - by increasing the quantity of heads (and cost of the machine) the increase is linear and still marginal. By utilising scrolling engines and optimising the printing conducted in shadow time the output of a scrolling machine is significantly higher. Where a traditional DLP machine with 8 heads could produce 14 cubes/hour, a scrolling machine could potentially produce over 1000 units with a 900mm vat set up. In terms of cost per part the estimation is that a scrolling set up would be 60-80 times more cost effective per part due to optimisation of shadowtime and curing.

In other words - scrolling light engines is a key enabler to high quality high volume production of 3D printed components.

[Contact us](#) so that we can help you find the optimal set up for your need, or if you are interested in our dynamic light heads and motion stage solutions.



Examples of throughput using our light engines in comparison with traditional light engines