
Subject: Printing neon parts out of glass?

Posted by [MissStabby](#) on Thu, 05 Apr 2012 15:04:05 GMT

[View Forum Message](#) <> [Reply to Message](#)

today i came across an artist who created all kinds of anatomical shapes with (traditional) glass and then turns them into amazing looking neon/plasma lights.

Now this brought me to the idea and question,

is the printed glass strong/dense enough to be used in air tight sealed neon art?

I have currently no experience with neontubes or anything it's just that it got me curious about the possibilities.

Like would it be possible to create a printed (glass) shape and contact a neon artist to make it work (or just inspire the neon artist to do such things)

<http://ericfranklin.com/#luminous-glass-sculpture/6>

Subject: Re: Printing neon parts out of glass?

Posted by [stonysmith](#) on Thu, 05 Apr 2012 19:02:36 GMT

[View Forum Message](#) <> [Reply to Message](#)

Wow.. neon would be a cool finishing option!

Subject: Re: Printing neon parts out of glass?

Posted by [GlenG](#) on Fri, 06 Apr 2012 22:44:52 GMT

[View Forum Message](#) <> [Reply to Message](#)

Theoretically "printing" glass parts (3dgp) for Neon work might be possible. But you need to understand that it is very much different than the more traditional glass materials and fabrication processes. Yes printed glass would be gas tight, but it is not transparent. So a couple of strategically placed LED's might produce the same result.

Also it is not quite as strong as blown glass. I suppose this could be compensated for by increasing the mass of the part. The biggest obstacle however is due to the fact that printed glass parts have a tendency to distort during their thermal processing. Hollow sections are subject to collapse and/or rupture so creating intricate tubular channels via 3dgp would be very difficult and in some cases, practically impossible. A lot would depend on the overall design. Something like the "skeleton" would be a nightmare to produce! Personally, I'd say 3dgp is not a very good candidate for Neon work.

-G

Subject: Re: Printing neon parts out of glass?
Posted by [MissStabby](#) on Fri, 06 Apr 2012 22:59:32 GMT
[View Forum Message](#) <> [Reply to Message](#)

hmmm very interesting,
also about the distortion effect that is a part of the thermal treatment of the printed glass.

I wonder if eventually 3d printed glass will be possible in a way that it creates completely clear and strong glass parts.

but yeah the leds could also work on the frosted material with lots of complex shapes i guess, still that might also be an interesting project.

Subject: Re: Printing neon parts out of glass?
Posted by [GlenG](#) on Sat, 07 Apr 2012 14:51:21 GMT
[View Forum Message](#) <> [Reply to Message](#)

Here is the way the current 3dgp process works: The very same machinery used for printing SS parts is used for glass. You can look at videos and understand that both processes begin with powdered media, built up vertically, layer on layer, temporarily held together by polymer binders. So in effect, a freshly printed glass part is really just a stack of 40 micron glass beads, stuck together with glue. Now imagine a jar full of glass marbles. There are air spaces between each bead, right? When this stack of beads is heated to a point at which the glass begins to melt the air between each bead becomes trapped, forming microscopic air bubbles. No way around this! This is why finished parts are not transparent.

The "distortion" issues are somewhat harder to explain, but it has to do with the nature of molten glass. When the raw (green) glass prints are prepared for the fusion cycle they must be completely supported by some form of refractory media. When glass (any glass) is in a semi liquid molten state, without support, you end up with a puddle. Solid shapes are pretty easy to support. Hollow sections are trickier as they must be completely filled with support media. As the green print begins to fuse and consolidate there is also a significant amount of shrinkage to contend with. So, when you have a hollow sphere like shape, filled with support media, as the shape begins to fuse and shrink, stress begins to build up which can lead to part failure. Some of this can be controlled, but sometimes it's just a "no go" situation.

The engineering properties of glass, the high working temperatures, the need for very tight thermal control during transition from molten to solid state, present significant obstacles for developing more advanced 3d printing processes. Some very cool things can be produced with the current system but there are factors that need to be understood and respected in order to produce good useful results.

-G
