Calm yourself with this 3D printing demo video



A scientist brushing away a gray powder to uncover a newly 3D-printed machine part is the most soothing video you'll see this week. It's up there with Bob Ross painting a flawless tree, or even someone vacuuming perfect lines in a carpet. And the fact that it comes out of one of the country's major national laboratories makes the relaxing video even more charming.

The hand holding the brush is attached to Amy Elliott, a research scientist at the Oak Ridge National Laboratory who specializes in 3D printing technology. The video starts after the printing itself is finished. Elliott uses a kind of 3D printing that involves squirting layer after layer of a glue-like binder into powdered metal, forming a tool or machine part that Elliott has to uncover eventually. That's where the brushwork comes in. "I think that's everybody's favorite part. You get to put on your archaeologist outfit," she says. "You just sweep the powder gingerly, and then you lift the part out – and the part is born."

It’s called binder jet additive manufacturing: the printer shoots a liquid binder into a layer of powdered metal beneath it, then spreads another layer of powder, then shoots another jet of binder. “The binder seeps through, like rain on soil,” Elliott explains. The two substances combine to build a shape within the tray.

After a trip to the oven to cure, she excavates the metal shape from the powder with a brush, and sometimes with a vacuum. (Here’s hoping that’s their next video.) Finally, she fires it in a furnace just like a piece of pottery. That’s where the binder burns away, leaving a hard metal form. In this case, that square gizmo is a heat exchanger that could be used in, say, your air conditioner.

Elliott says this method is faster and cheaper than metal-printing alternatives, like using a laser to weld a bed of powdered metal into a shape, or squirting molten metal out of a 3D printer nozzle, she says. For that, the nozzles have to be made out of a temperature resistant material like ceramic, which can get expensive, she says. Using the method in the video, Elliott can print a part like the one we see here in about an hour.

More importantly for our purposes, though, the method is as soothing to watch as someone raking sand. And Elliott says it’s fun to do, too. “It’s super relaxing, brushing these parts off and vacuuming powder,” she says. “It’s kind of like playing in the sand.” The team can’t play background music while they’re working for safety reasons. But if they were allowed to, she’d probably go for something like Enya, she says. “The typical massage studio stuff.”

https://www.theverge.com/2019/1/5/18169091/3d-printing-additive-binder-jet-oak-ridge-national-laboratory-department-energy