Exciting Times

After obtaining her MFA in 2001 from the Konstfack University College of Arts, Crafts and Design in Stockholm, designer Towe Norlen wanted to find a way to build her jewelry designs directly in metal from CAD files—a technology still in its formative years in our industry at that time. She came across the process of laser melting steel, and she wondered if it would be possible to apply the same process to gold.

Additive manufacturing is here to stay

Norlen, who now owns Towe Jewels in Geneva, Switzerland, reached out to IUC AB Karlskoga, a Swedish research center that owned an EOS laser-melting machine. There she met Lena Thorsson, a metallurgist with whom she would work closely to create a research project for laser-melting gold. The pair contacted Hilderbrand & Cie in Thonex, Switzerland, to inquire about manufacturing a gold powder under Thorsson's guidance for use with the laser-melting process.

Using 3 kg of gold supplied by the Swedish mining company Boliden, Hilderbrand gas atomized an 18k yellow gold powder, which Norlen and Thorsson used to start a long-term R&D project that resulted in the direct manufacture of gold chains on an EOS system. These would be the very first gold jewelry pieces ever produced using "additive technology."

While Norlen's chains were received with great enthusiasm by key industry entities such as the World Gold Council, as well as some major high-end manufacturers, the consensus at the time was that the industry simply wasn't ready for the technology. "From a technical side, everyone thought it was fantastic," says Norlen. "But eventually our financing ran out and we sold the patents for future royalties on this process to EOS. It was clear that we were ahead of our time."

As you'll see from this month's cover story, "Imagine That" (page 22), Norlen's time has come. Today, EOS is working in cooperation with Cookson Precious Metals in Birmingham, England (Thorsson's current employer), to offer a total additive manufacturing solution to the jewelry industry. Norlen is having many new designs produced by Cookson.

"When we started this a little over a decade ago, we were too early for the industry—there were not enough designers using CAD," she says. "Now, the time is right. It will still take about five years for this to take off. As more designers entering the industry learn how to use CAD, and laser melting becomes more familiar to the industry, the demand for the technology will grow."

The EOS machine and the Cookson powder are among the handful of additive manufacturing options currently available to jewelry makers and designers. The potential for this technology to have a significant impact on the industry is very real—but it's important to note that it won't likely replace the lost-wax casting process.

"Designers must understand that the successful application of additive manufacturing is not by competing with what can be made by traditional technologies, but what cannot be made," says powder metallurgist Joe Strauss, president of HJE Co. Inc. in Queensbury, New York. The biggest benefit of additive manufacturing—and what I hope you will take away from this issue—is the creation of pieces that are simply not possible to cast. Linked chains, intricate hollow forms, mesh—these are the types of designs that will best take advantage of the technology's capabilities.

Norlen adds, "Additive manufacturing will enable us to create fantastic new forms that are more in the front line of fashion. These will be jewelry pieces we have never seen before. It's a very exciting time."

Want to get excited about additive manufacturing? Turn to page 22 and read on. ◆

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