Interview: Formalloy says "now is the time" for new materials for additive manufacturing

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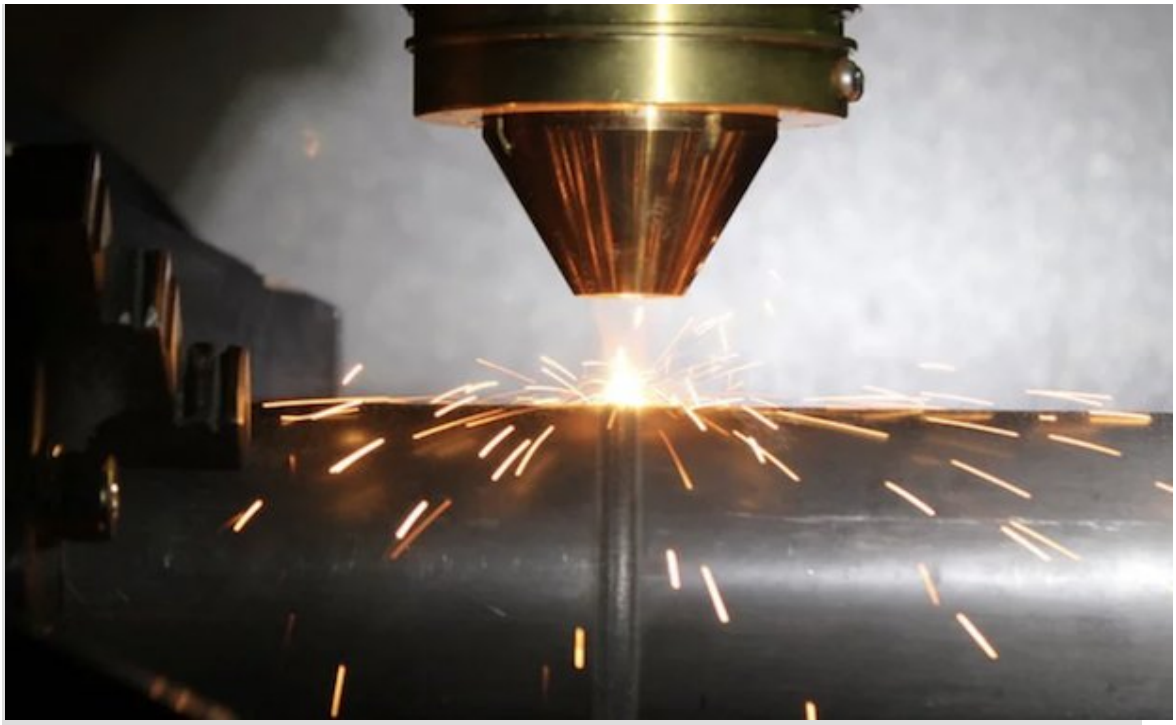
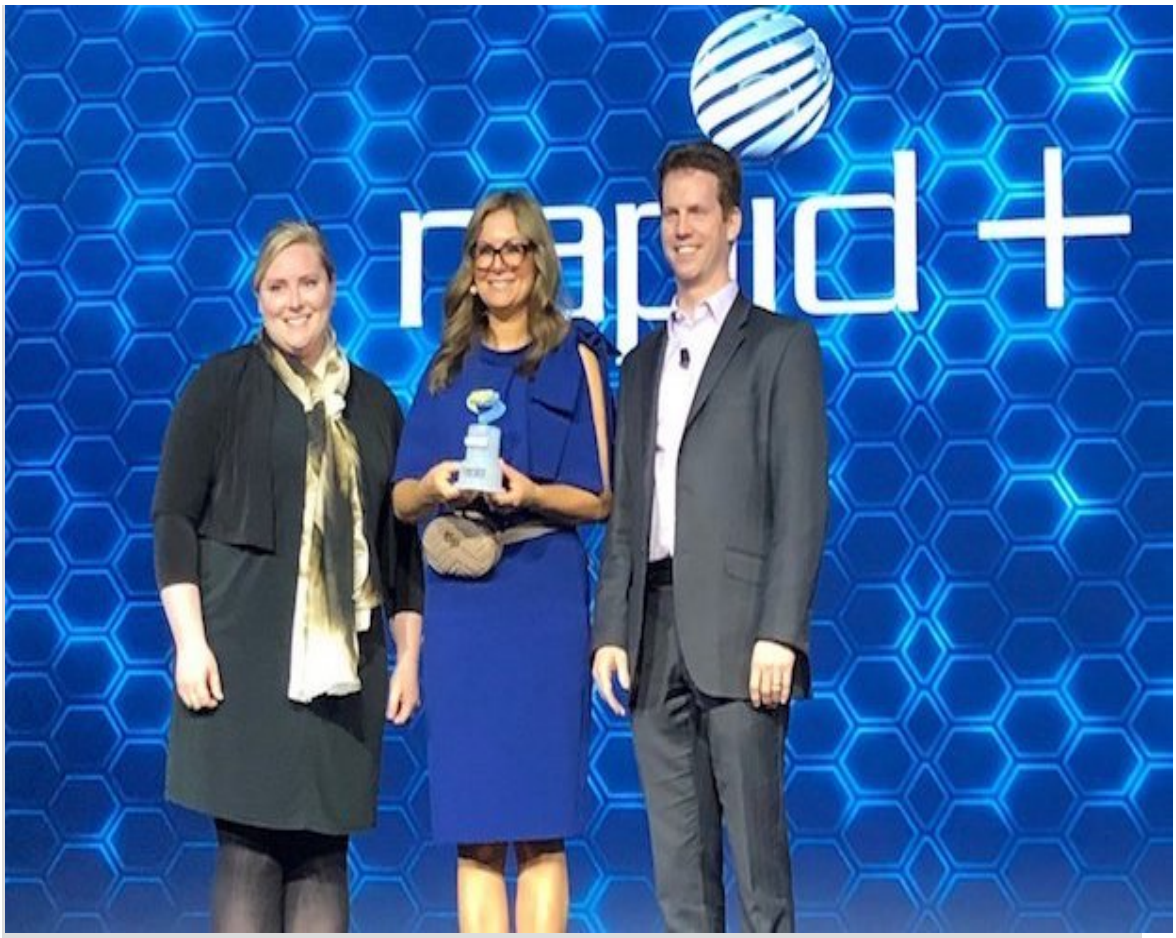


Formalloy's DED technology is said to be capable of printing with one of the most comprehensive lists of metal alloys on the market.

The rapid rate of additive manufacturing (AM) hardware innovation over the last few years has ushered in new eras of speed, performance and (so-called) world-firsts. In fact, we've been so maxed out on hardware innovation that TCT columnist Todd Grimm recently spoke about celebrating the steady march away from full blown hardware launches towards refinements and features as a sign of the industry's progress. But hardware is only one piece of the AM puzzle and players are gradually turning their attention to other parts of the value chain through collaboration and development, namely in materials.

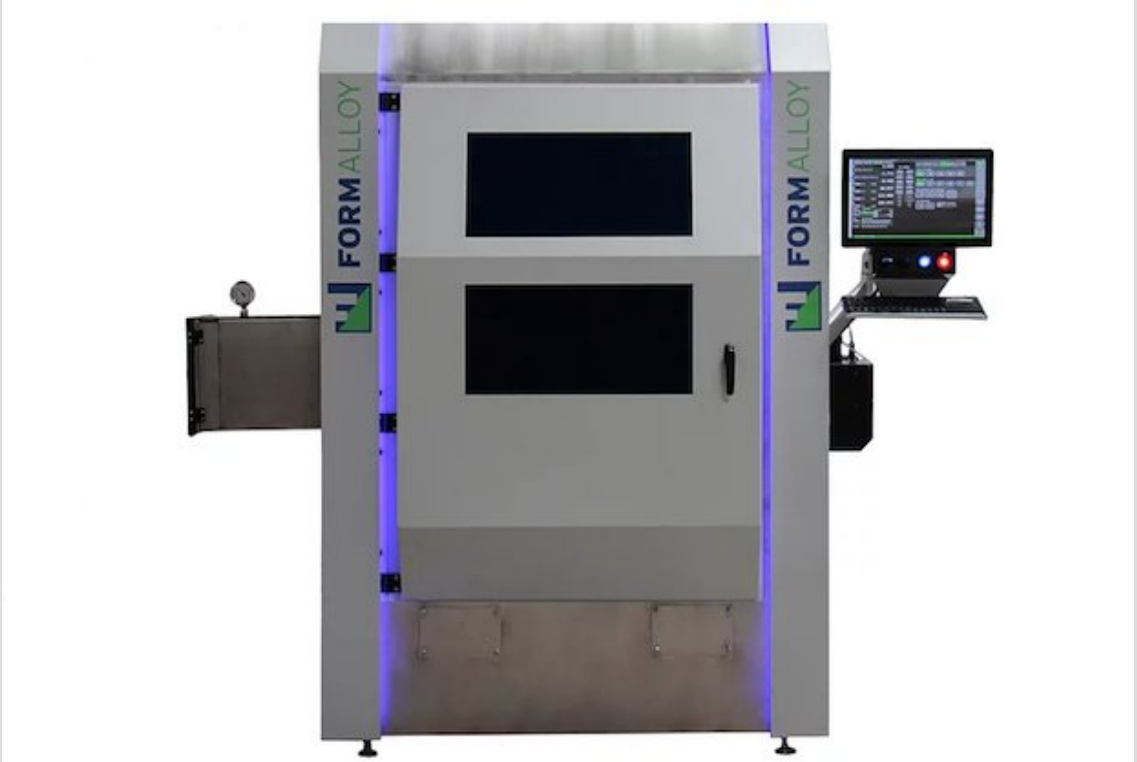
One of those companies is **Formalloy**, a California-based metal 3D printing outfit, which earlier this year took home the Exhibitor Innovation Award at **RAPID + TCT** for its Alloy Development Feeder (ADF), a new tool designed for exactly that, developing metal alloys.

"Now is the time that we really need the new materials," Lang told TCT. "There are all of these great technologies and now we're at a point where we're tweaking our systems and processes to process these materials that are decades or centuries old. So why not develop a new set of materials? This [feeder] really enables that process because material development is so challenging. So, we're trying to give this equipment to those developers to help us so that we can make better quality parts with superior features."



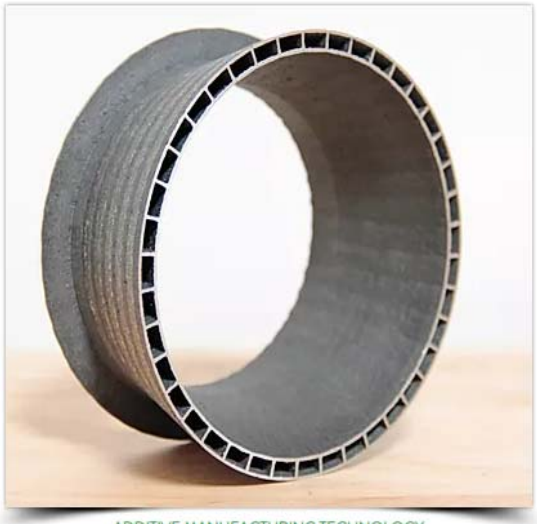
Formalloy, Co-Founder Melanie Lang accepts 2019 RAPID + TCT Innovation Award. (Image: RAPID + TCT/Twitter)

Formalloy's technology is said to be capable of printing with one of the most comprehensive lists of metal alloys on the market. Direct energy Deposition (DED) systems are equipped with blue light laser technology to create near-net shape parts with diameters spanning 1mm to 1 metre at a deposition rate up to 15lbs/hr and has already been adopted by the likes of NASA in a series of R&D projects to investigate the scalability on AM for large, high-value components. The LMD process can also be applied to existing parts for repair damaged or worn components.

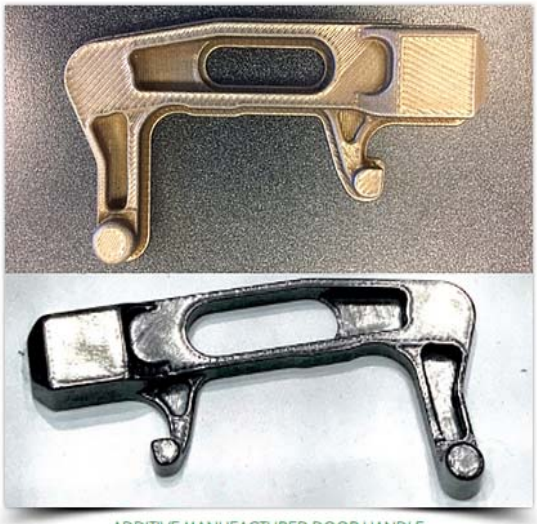


Formalloy DED system.

"With our DED Systems, we always talk about how it's a scalable process because you're blowing the powder where you need it, you can do very large-scale build volumes," Lang commented. "It's also very fast for high throughput and what we're showing here is that we've integrated our same equipment from our turnkey system with a robot, to show that it doesn't have to be in a turnkey system, you can take the same technology that we have in our system, and you can bring it to your factory floor and integrate it into a robotic cell and use the same process parameters that you've used for machine."



ADDITIVE MANUFACTURING TECHNOLOGY
NASA ROCKET NOZZLE PART
INCONEL 625



ADDITIVE MANUFACTURED DOOR HANDLE
AS-PRINTED RESOLUTION VS SURFACE FINISHED
INCONEL 625

With FormAlloy's technology, customers and clients will be able to confidently FORM parts 2-100x faster than other methods and produce high quality, repeatable builds with in-process monitoring and control features. The X&L-Series systems reduce machining time and nearly eliminate material waste, particularly with high-value materials such as titanium and Inconels. Additively Manufactured parts from FormAlloy can provide design features that can't be achieved with conventional manufacturing methods, such as internal cooling channels and multi-metal parts.

FormAlloy's DED process deposits metal with a coaxially aligned laser/powder nozzle. With the FormAlloy process, clients and customers can achieve faster build times, superior material capabilities, and larger build envelopes compared with powder-bed technologies such as direct metal laser sintering (DMLS) and binder jetting.

FormAlloy's DED process can produce parts with dimensions from less than 1 mm to greater than 1 meter with bead widths from 500 micron and up.

The beauty of this, particularly for users who may be new to additive or customers requiring large parts in Formalloy's target markets of aerospace, automotive and energy, is it can be deployed into current production environments without being restricted by build volumes in a standard machine solution. For this California company which was founded on a goal to work on the next generation of how we build high-value components, these developments are significant milestones in delivering on that ambition.

Lang concluded: "This is really the opportunity we've been talking about in additive for a while. It's been used significantly in prototyping and low production and now it's time to start thinking about the future and what technologies can transition to those large build volumes and throughput, and that's what we're showing."