Kurt Maldovan: Absolutely. I think Pat mentioned the ASTM standard. But the biggest question that we had internally, when we first started investigating, [00:07:00] is large scale additive construction, additive manufacturing, an area that we could dive into, was related to getting something through code officials and approving authority to say, how can we show that something that's been additively constructed meet specific structural requirements? Will it stand up to the seismic zone, seismic requirements?

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the same thing on Mars. How do you see that work, informing what can be done in the built environment here closer to home?

Kurt Maldovan: Yeah, so much of the work that our Jacob Space Exploration [00:13:30] group has undertaken was related to that materiality that I just spoke of, as well as the printer head itself, and understanding that printer infrastructure, the device that's going to actually extrude and place the materials that were formed up. So I can't speak completely intelligently about what our scientists that are working very closely with the team at NASA are doing, because it is truly material science. And as you can imagine, someone has gone to the moon, extracted [00:14:00] that material, brought it back to the lab, and they're analyzing that material and creating simulated materials that echo the same types of properties for, like you said, both the moon and Mars.

So understanding the way that that performs, and they're doing that and in the lab. But beyond that, how do we expand, right? How do we take it to the terrestrial environment? So there's certainly, I'll call it commercially available products. I think of it just like what you said earlier, Patrick, the maker bots of

of a house that could be CMU or cast in place, that part would have the design appeal and also the structural stability, but then they can build with traditional means and methods on top of that. But not dissimilar to a multifamily project that you might see with sheer walls built out of CMU, wooden timbers, stick built construction in other areas, and then even metal studs some [00:23:30] place. So we're adding to cast in place, precast or now 3D printed additive manufacturing, as a process and an ability. And so I definitely agree with Kurt, when it doesn't have to be all or nothing.

Paul Teson: My last question for today, for you, Kurt, is where do you see additive manufacturing technology headed in the near future, and what are the potential use cases that loom on the horizon?

Kurt Maldovan: Yeah. So Paul, I have a few answers for that. And Pat, you [00:24:00] touched on it just a second ago, but building on is the fully additive manufacturing community is going that way. I think it's just a matter of time before folks get

And so [00:26:30] we need to find the marriage of Gomaco or Caterpillar or a