

# Better Business with Malvern: Printed Farms— The Future of 3-D Printing

February 18, 2021 by [HILLARY DOBBS](#)

It seems everywhere you turn, something—if not everything—is automated. Can you imagine a time when cars were built by hand? Or ships? The construction industry may just be the last major industry where a worksite is predominantly populated by humans. In the not-so-distant future, you will be looking back and imagining a time when structures had to be built by hand. That is, before you could print them. And what's interesting is that the sector that's leaps and bounds ahead of any other when it comes to the 3-D printing of functional structures is the farm and agriculture sector. We'll tell you why in this blog, and also tell you why the company leading the charge is [Malvern Bank](#) client [Printed Farms](#).



One of the distinct pleasures of private banking is getting to know, learn from, and help pioneering experts like Printed Farm's Jim Ritter. You may have heard, as I had, that we are on the brink of printing homes and structures. But did you know it's already being done? Within the world of 3D printing construction, because the permitting and regulations are so complex, there's a particular sector that's the easiest place to start, due to the fewest barriers to entry. That sector happens to be our world, the agricultural and farm space. I don't mean the elegant farmhouse in which you live—that's construction is still heavily regulated, but your barns and sheds all fall under the Chapter 604 Section 50 non-residential ag-exemption. This means they can all be built by 3D printing much more readily than a home. Jim Ritter and Fredrik Wannius of Printed Farms are already

using 3D printing to create farm buildings. If you're wintering in Wellington, FL, they just did it in your backyard. The apparatus is a simple but large-scale latticework of girders, with a robotically controlled printer/pourer that layers in concrete based on a digital model fed into a computer. It has all the benefits of 3D printing: highly detailed, minimal error, and the capacity to work 24/7. They don't need lunch breaks. And here is the kicker, it uses 50% less labor, so most of your money is spent on the actual build, not on human labor costs.



In addition to being more efficient in terms of expenditures, there is also more opportunity for variety and innovation in design. Standard out building architecture is usually just reducible to block and obvious square forms due to limitations on prefabricated pieces you work with, such as bricks. But a printed farm can essentially shape those bricks in real time. That allows for much more leeway in terms of imaginative architectural design.

There are many additional advantages, and one of them is speed. Imagine your Epson printer cartridges rocketing back and forth to create a color portrait versus doing that same color portrait by hand. It seems it is essentially the same thing with 3D printing. A brick mason could be laying down mortar a brick at a time—or you could have a 3-D

printer “Epson” it out in a fraction of the time and with less margin of error. By the way, that’s not to insult brick masons – I respect them, and Jim Ritter does too. But he points out the reality that the average age of a skilled construction worker is 58, and there are simply not enough people coming up to replenish that pool. So as Jim sees it, printing farms and printing buildings has a societal benefit too. It fills that gap.

There are a couple possible concerns I raised, and Jim addressed. First of all, it’s not a robotic process that stamps farms out of the ground. It’s bespoke and custom, and integrated into the ecology of the farms we know and love. Secondly, his objective is not to displace GC’s or the skilled laborer—he wants to integrate with them and give them a new tool, all while building stronger structures, doing it faster, and more cost-effective. But don’t just take my word for it, learn more about printing with Printed Farms by checking our interview below or visiting <https://printedfarms.com/>.

**HD: How did Printed Farms come to be? Did you see a need for this? Was it your idea?**

JR: The world saw a need for this. I just jumped in. If you read any literature over the last 5 years, it’s all there, 3-D printing as the next big thing. This is a logical continuation of where printing is going. As far back as 50 years ago, the cost of making money building houses has been going down. It’s costing too much to build, so they’re constantly skimping on the quality of what goes into a house to make money. That’s why we see these guys come in and they build 100 of the same home, because they buy in bulk. That’s how they make their money; otherwise they’d lose money. Printing gives you free form design so every house isn’t the same, and multi designs that you just plug in, then this form of manufacturing houses/structures, it’s in every article. Everyone knows it’s the next big thing

**HD: Why print these agriculture and farm structures?**

JR: Currently with the climate and the way the world is going with flooding and storms are increasing, which we have seen a big pattern for and why it’s so cold now, because the arctic is melting, you’re going to see much bigger storms, more intense storms, and flooding with the rising levels of the seas. You’re already seeing it on the coast. So concrete buildings are the only buildings we have today that are going to withstand those forces.

**HD: Is that the primary advantage?**

JR: That's one primary advantage—your building is still here after a storm. The other advantage is it's about 60% labor cost to 40% of product that goes into your building. We are going to reverse that; we're going to drop that down to about 30%, 40% labor vs. your building costs. By cutting labor in half, we're allowed to have better building materials and still be cheaper to do so. The other aspect of this technology is, it's a machine—it doesn't get tired, and it basically does a better job than humans over time. That's why everything else in our society is basically done by machines and not people.

**HD: It's undeniably more efficient, but do you have a ballpark of just how much more efficient?**

JR: That's what we're trying to prove by doing [these] buildings. We have to put the word out, and people have to be willing to be a part of our initial building stages. We are proving these concepts. By printing this first shed, we proved the building concepts of what we are going to do. Now each time we have to do it better and better, faster and faster. And as we scale up, the costs of concrete, the cost of machines, and all the costs are going to drop. But right now, our costs are [slightly] higher because it's not scaled.

**HD: What is next for Printed Farms?**

JR: We are looking for viable ag projects that we can just jump in and print and go to the next level. Our goal is to do it better, every time. Do it faster. Do it cheaper.