# ViZZ Technologies - Know It All

**Episode 5 – With Raghi Iyengar** (CEO of Manufacton and ViZZ Technologies) **and Dave Cooper** (Volumetric Construction Expert and Industry Thought Leader).

We're seeing more and more members of the construction industry explore and adopt innovative technologies, processes and methods to improve productivity. Our latest Know It All podcast episode, **Exploring the Modern Methods of Construction**, dives into the transformation of the sector and the broad movement towards offsite.

Raghi Iyengar, CEO of Manufacton and ViZZ Technologies, sat down with Dave Cooper, a volumetric construction expert and industry thought leader through his DaveCooper.Live platform, to discuss what the future of the industry looks like based on the current trends and needs of today's teams.

As Dave explains in the podcast: "We're seeing a different population of people come into these manufacturing jobs with a different mindset and with different technology. When we talk about what are we seeing, we're starting to see a lot of really, really smart people come in. There's only one way to go in our industry and that's up and it's starting to happen, and I think people as they catch on to that, they see the true opportunity for growth."

Read the full Transcript below to explore key insights:

## Episode 5: Raghi Iyengar & Dave Cooper

**Raghi:** Welcome to Know It All, the podcast about the future of construction and manufacturing. I'm your host, Raghi Iyengar. And today I'm joined by an exciting guest and industry thought leader, Dave Cooper, a well-known expert on the modern methods of construction. Great to have you, Dave.

**Dave:** Yeah, it's great to be here, Raghi. Thanks for having me.

**Raghi:** Sure. Dave, today we are going to have a conversation about offsite construction, innovation and construction methods and the transformation of the construction supply chain. I'm thrilled to hear your thoughts on these topics and what it means for construction today. But before we dive into this in more depth, I'd love to take a minute to hear about your experience and history within the industry.

**Dave:** Yeah, sure. I mean, I don't know how far you want me to go back to the birthing table or not, but I can tell you that I've been in the industry most of my life, except for a brief stint in the military and a little bit of time at Johnson & Johnson. But I started off in the offsite construction industry really full time about 25 years ago.

And, you know, I was a modular builder, three locations have about 1600 builds under our belt, everything from single family, residential, all the way to multifamily and commercial projects. And since doing that, we started doing our video and our broadcasting and that's where Dave Cooper Live was kind of founded from.

We got tired of seeing people do things the way they've always been done in the industry that has never changed. And we decided it was time to kind of put an end to that and started some videos on it and doing what we could do to make those changes. So, our goal is to

engage with industry thought leaders, share their stories and really move conversation forward around the disruption in the new home construction industry.

And we use video and an unscripted real-life approach. And we connect leading experts with new partners and resources and the consumer to drive change and grow their perspective businesses, but also drive collaboration together, you know, so we try and keep the conversations genuine, thoughtful, and we try to get to the heart of Why we do what we do, not just the What we do.

I think it's time for a change; it's time to build it better. As we say, #BuildItBetter and build healthier homes.

**Raghi:** That was great. Thanks, Dave. It's actually funny that we connected only recently because we have so much in common. Anyway, let's dig into what we're noticing in the industry.

Let's talk about this broad movement towards offsite construction. What are you seeing as recent trends and how do you see this evolving?

**Dave:** Sure. So, I mean, the trend is pretty simple. It's going in the right direction for the first time in my 25 plus years being in this industry. And there's several factors for that.

One is that we don't have any young people coming into our industry. It's not cool. Nobody likes it. Nobody wants to cut two by fours when they can make money playing Fortnite and games and virtual reality, VR AR and all those things that are out there. So, you know, with that said, obviously the lack of labor really drives people to look at things differently because they're having a hard time getting their projects built. And especially when there's such a big supply and demand out there.

So, what I see happening every day in front of us, as we travel this country, doing our show is. How do we get young people back in here? People are trying to come up with innovative ways and different thought processes to change how we build. Homes aren't healthy as we found out in COVID, right? A lot of people are realizing they spend so much time in their houses that they're saying, 'Hey, maybe this isn't as great as we thought it was 20 years ago, 150 years ago.' So, I see a positive change coming in this industry. A lot of it is from outside influence coming in, but also, we're seeing it from within our industry.

But we need more people. We need more women; we need more ethnicity. We need everything in this industry.

**Raghi:** It's funny. You talk about the time that you've been in this industry. And it's funny because people talk about Manufacton and here they're like, 'Hey, perfect timing to create this platform for offsite construction.' And I'm like, I don't know about timing because I've been trying to drive this for 35 years and get construction to be more like manufacturing. And finally, it is happening, you know?

So, it's taken its time, but I like what you're seeing in terms of things starting to move in the right direction and it's starting to accelerate and so forth.

**Dave:** You know, Raghi, I have to just add to that, but you're absolutely right.

I mean, can you imagine we're the only industry that hasn't changed in a hundred years? It makes zero sense that we still think that building onsite in the rain with moldy wood and wet lumber and everything else that happens out there makes sense. We're definitely beating the same drum.

[00:04:56] **Raghi:** Let's talk a little bit about that switch in terms of the traditional construction versus what you love to talk about, which is modern methods of construction. So how do you see offsite construction driving innovation in construction methods?

[00:05:09] **Dave:** Yeah, sure. Well, let's get to the labor part, right? It's always sunny and 70 inside a manufacturing facility is kind of the first starting point for people.

But you know, really, we have a housing crisis in this country. We are short millions of homes and we're short hundreds and hundreds of thousands of skilled trade laborers. The only way we're going to be able to catch up and mass produce and make the amount of homes that we need at the affordable level is going to be through modern methods of construction.

That's using, you know, indoor automation, as simple as software, similar to what you're doing. It's as simple as how do we make our process better? How do we build it better? How do we be more precise? How do we not waste so much material when we're doing it? Because that's a cost that gets passed onto the consumer.

A lot of people don't understand when they drive by the construction site, and they see 30-yard dumpsters all lined up out there. That's 30% of your money that went in the trash if that's your house that's being built. And I think that's where Offsite construction, modern methods of construction, industrialized construction, whatever people want to call it, is really going to help out.

It's going to help us take things to the next level, not only from productivity, but also using robots in AR and VR. We're going to see young people want to do it. It's going to be fun.

**Raghi:** Yeah. And on that note, we talk about waste and working conditions, but what about quality? Do you see improvement in quality of the product being built when it's done offsite?

**Dave:** Yeah, for sure. Listen, you cannot cut the same two by four across the toe of your boot a thousand times the same on a job site.

That's why you have bigger settling issues in some houses then others. The precision with offsite, modern methods of construction are within millimeters. They're using laser guided solves. So, the quality of what you get is superior in my humble opinion than what you're ever going to see on site.

This doesn't mean you can't get a site builder that can do great work. It doesn't mean that. But if we want to have a lot of great work across the country, then we need to start using some automation and some form of technology to help us achieve that.

**Raghi:** And I think on that note, the way I've been seeing some of those things evolving is kind of a staged approach, saying let's take construction, move it from the site into a factory first, even if you're using the same methods, then start improving your process, like you said,

in the factory itself. And then once you've got that, you can start driving some of the automation and that can actually help drive more innovation in materials as well, especially now that you've got automation, you're in a factory setting, and then you can start getting different types of materials to further evolve it. So, I see how this, in terms of constant innovation in construction methods, has a good starting point with offsite construction.

**Dave:** Yeah. With the automation, some of the transformation is just not technology, it's products.

Like we were talking about with supplies that come in, most of the products we use today are built for humans to carry four by eight sheets of plywood or gypsum board depending on wherever you live and what you want to call it. But we are seeing a lot of the supply chain ask how come we can't build a 20 foot by 40 foot sheet of plywood and install it in a manufacturing facility. It saves lumber, costs, your walls, all those things. So, there is a big change, not just in the industry itself, but from the supply of the industry.

**Raghi:** That's awesome. Let's talk a little more about the supply because right now, supply chain, it's all about supply chain issues. Everybody is talking about disruptions in supply chain and all that, which is over the short term, but there's also this longer term trend that seems to be happening here.

So, what do you see in terms of the opportunities for the whole transformation of the construction supply chain as offsite construction gains more momentum? I see things like single trade becoming multi-threaded opportunities for people, for companies to expand their footprint of what and how much of the building that they can produce.

So, I'd curious to hear about your thoughts about how you'll see this transformation in the supply chain.

**Dave:** Yeah. Well, I mean, if we touch on the trades really quick, and again, then we'll get into the supply chain. We are seeing what you alluded to is we call them super trades, right? It's no longer just the foundation, concrete, masonry person; now, they handle everything from setting up the site, excavation of the site all the way through to sill plates on the foundation. We're seeing trades actually take on more of the work because they're having a hard time getting skilled labor to do their job. So, they're starting to make these super trades.

We are seeing a lot more of that across the industry. And offsite construction allows that to work for them as well, because now they can control much more at the beginning of the process from the site, work through the foundation all the while that you have the building or the house or whatever it is being built off.

They have control of meeting those timelines and deadlines because it's all in-house and they're outsourcing so much of the onsite labor for the actual building part of the structure. So, we're seeing the super trends pop up across this country and in a big way, and they are leaning towards offsite construction, which, just to clarify, that could be modular panelization, concrete has offsite, CLT, which is cross laminated mass timber. So, there's all different forms. It just depends on which one's the true system and which one is just offsite components.

**Raghi:** I'd like to hear a little more also about how you see this shift. I see a couple of shifts happening – one is now in terms of the supply chain, because everyone's trying to expand

the scope of what they can do, and like you said the super trades. Going back to my background in the early days of when I was at Intel for many years before I started off as an industrial engineer so you see how this was in other industries before where traditional competitors suddenly became partners.

Two competitors in one situation would be a customer of the other or it could become a supplier. So it's always changing dynamics and almost becoming situational of who's the competitor here, maybe a partner in another situation could be a customer in the third and could be a supplier in a fourth.

All these changing dynamics, what are you seeing in that area?

**Dave:** You know what, Raghi, you hit the nail on the head. How awesome is it? Collaboration. Can you imagine the industry actually talking with each other and working together to build better?

It hasn't been working and that's why we have a housing shortage. That's why we have homeless people all over the country because they can't afford a house. So, the way we've been doing it doesn't work. I think what you said just makes me so happy because this is what needs to happen. Well, nobody has the secret sauce. If they had the secret sauce, we wouldn't be in the predicament we are in the country and around the world, frankly.

So, I think with that, you're going to see more trades, for survival purposes, start to work together, or you're going to see more trades start to come together that were once competitors because they respect each other. And they know that they're going to be able to get good work if they work together and they can get more of the business if they pooll their resources together.

I think it's a great thing. And I think the entire industry needs to be turned upside down and realize that collaboration is how we're going to get to the next level and bring housing back to an affordable level.

**Raghi:** The other trend I've been seeing and wanted to get your thoughts on is not everyone necessarily needs to go and build a factory because they could also leverage others. You know, you had your fab-less semiconductor companies versus companies with their massive multi-billion-dollar fabs that they would build for themselves and so forth.

I'm starting to see this trend towards, hey, if we can create a product and we don't necessarily need to have a factory to build it ourselves, we can work with a partner or supply chain partners who can produce either all of it or portions of it. And it's those new business models that are kind of getting creative.

**Dave:** Yeah, they truly are, especially as you get into mid-sized builders. Let’s use residential as a starting point to this conversation. Now, 100, 200, maybe 500 home residential units that are happening can all be sourced through a local manufacturing facility.

They get all their land development in place. They get all their infrastructure in place. All the while they are having their 100s of units built at a manufacturing facility that can be actually put in place much faster, right? Heads on beds. You're turning buildings, you're turning

houses, you're touring and turning hotel rooms, whatever, when you build it's about heads on beds, how fast can I move my product or rent my product?

This gives them a speed to market that they traditionally do not have just yet, because you're not delayed by the weather as much, that's for one thing, depending on where you live in the country. But two, that speed is what's incredible. And three, as a developer, you are reliant on the trades, so right now, again, we get back to that it's hard to find good trade.

This is a way for them to increase their productivity and reduce their liability. This is the big one people don't do. They always say, well, you're 10% more than I am already. I'm going, no, we're not 10% more in modern methods of construction. You have to look at the life cycle because that unskilled trade labor that just cost you $500 million and mildew and mold lawsuits because you didn't flash it right, it's not happening in our world. Not that it doesn't happen, but in our world, there's more checks and balances because it's built in that controlled environment.

So those are kind of the differences in the value add that these developers are now starting to understand that full life cycle, not just well sticks and bricks, you know, because it's not just sticks and bricks. It's a life cycle of a warranty that goes with it.

**Raghi:** It's interesting when you talk about people and especially now as construction is moving from the field to the factory. Now you have this idea of the roles and skillset of the people. You know, so what, what are the changes that you're seeing?

What's different now as construction moves from field to factory in terms of the roles, the skillset, the types of people, and, you know, especially if we want to get more young people into our industry? What are you seeing there?

**Dave:** Yeah, well, you know what? I'm seeing younger people and I'm seeing more women in the factories. We've traveled the country on our Build It Better road show for almost a year and a half now, visiting all these factories and you would be surprised that some of these factories have upwards of 40% women working in the factories, everything from robots and lines to technology and the back office to the production floor.

When you're in these controlled environments, you don't have to be super strong. Nobody's asking you to carry around bags of concrete, like on a job site. So, the reality of it is, we can have really smart talent. We can have people that are there with really great minds being able to do the same work that can be done in the field, but maybe they're not strong enough in the field to do so.

We're seeing a different population of people come into these manufacturing jobs with a different mindset and with the different technology. When we talk about what are we seeing, we're starting to see a lot of really, really smart people come in. I mean, this is the good old west, right? This is the land grab of back in the early twenties or what have you, that were happening. Or late 1800s. History was not my subject, but the reality of it is, there's only one way to go in our industry and that's up and it's starting to happen, and I think people as they catch onto that, and they see the true opportunity for growth.

That's what's amazing about it because you can come in and sweep the floors right now but guess what? We need about 30,000 more factories. So, if you're in it now, and as this industry grows, that's a whole lot of upward opportunity for you as it's growing.

**Raghi:** That's awesome. And the other thing Dave is both you and I have lived it in manufacturing over the years and we take it for granted. But if you think about it, a successful manufacturing company, they have all built this culture of continuous improvement and that's how they have been super successful.

And are you seeing that in construction among the construction companies in terms of kind of building that culture because it doesn't have to be a big bang, solve everything today? It can be incremental, continuous improvement feedback on process, step-by-step improvements that you can make along the way in order to be able to have a sustained success.

**Dave:** Yeah. So, I guess there's two-fold to that. I am seeing that more with the new people coming onto the construction, manufacturing side of this. You see a lot more forward thinking. You don't hear 'well, that's how we've always done it' Or 'well, we tried that a hundred years ago and it didn't work.' You know, like, square wheels are still better than round, you don't want to hear stuff like that.

But I think that most people in today's manufacturing are busy. The whole industry is busy; they're maxed out.

So, there's two things to what you're saying: do I stop my line to put technology in and then not deliver my product to the people that are waiting for it that paid us to build it? That's one side of it. And that's why they don't adopt technology. Well, guess what? When their line slowed down, it means the economy probably slowed down. Right? Do I save that money now and hold on because who knows how long this recession, or slow down, is going to be? That's one side of it.

The other side of it is when you have companies like Autovol, you know, come on and they're doing $110 million fully robotic 400,000 square foot factories. That's the other side of the pendulum.

But, where does everybody else fit in this? Right. That's kind of the question. And I think to get back to answering your question, I think people are starting to realize with technology, like Manufacton, is that there's plug and play. There are little steps you can do.

I know that in these big manufacturing facilities, with all the technology in the world, they're still not as fast as somebody that's doing it more of an inside build way, you know, old school, but just building inside because you got to work out the tweaks, you got to work out the line spots. You got to work out the lumber; the lumber is not straight.

There's all these different things that happens with manufacturing and materials and process. But what we are learning is there are things that you can plug and play. And if you can optimize your process, not optimized by saying, I'm going to put a robot in, optimize your process, optimize the way you think about how your lines move and how your people move, you're going to speed up your process just by doing simple things like that. And maybe your first step is just some laser shooting out on the floor to help people lay things out. But you do not need to go through the roof with stuff, but digital twins, good ERP solutions, solutions that can help you optimize and streamline your process, that's where the real value is right now, to me.

**Raghi:** Any other big trends that you are seeing that we haven't talked about?

**Dave:** Well, I mean, we're starting to see more of a hybrid approach to building come out. We're starting to see modulars do crossland and, you know, laminated timber.

So, they're doing hybrid approaches to construction. 3D printing is a big one, right? We just did Black Buffalo 3D on our show and some of these other folks that are out there. But I think the biggest trend right now is generative and parametric design, right?

How can the computer think for you? So, get this, I'm designing, I'm drawing, right, I'm working on it, and then my computer, my CAD series, it comes in and says, if you move that wall two inches to the left, then that would be the perfect dimensions for a bathroom pod. That's starting to happen now where the computers, who are the programmers, are the architects or the designers or the draftsman or the engineers are drawing it out. Now they're getting real-time feedback from the cloud-based parametric, geometric design software that are out there.

So now it's a collaborative conversation, which makes us much more streamlined and helps us build a lot more efficient and helps you then design more efficient because we all know, give it to an architect or an engineer, sometimes it comes back a million dollars over budget. This helps them get away from some of that and be more productive and more efficient.

**Raghi:** That's really interesting because I see how this convergence of you want to get that visibility and control of your supply chain so that you can make sure that it can be effective in terms of what you're doing and going into kind of the productizing of the building so that it has the opportunity to start putting that together and converging those two to say, Hey, from the product, what's the process and the quality aspect of it in terms of production and procurement and delivery and all of that connected to the supply chain. So it could be, as you said, collaborative in the multiple companies all working together to create this building as a product and moving that through this lifecyle.

I agree, that's really the future. It's exciting how all these different things are moving in that direction.

**Dave:** Yeah, it is. Now imagine if we could get the consumer to ask for a better product, just like the pharmaceutical company, right? When they said you can no longer take doctors on trips and you can't pay for their family vacations and all this, what did they do?

They turned their marketing, and they went to the consumer and they said, ask your doctor for a better product. You want my blue pill, not their blue pill, right? Ask your doctor because XYZ.

We're getting to the point now where I think the consumer is starting to get a little more educated. Again, COVID helped that. Every recession helps us get a little bit better and more recognition for what we've been doing, you and I, for 20 years in this space.

And I think, that's the real change, when you see the consumer starts asking for a better product and it's starting to happen, or asking for modern methods of construction, that's going to be the tell-tale of how fast and where are we going to be going. But when you do hear that from the consumer, you're already too late, you should have been in it already.

If it was up to me, I would like to see, you know, like the supply chain, there are several people, but not as many as you would think that are looking at how do we design our products to work with the manufacturers that are coming on. How do we design that product? Because this all comes into sustainability as well as productivity. Because again, imagine I use the plywood again. If you had a sheet of plywood, let's just say 10 feet by 30 feet, a human is not lifting that, but a machine is. Well, that's less lumber on the inside. That's less two by fours. That's less shear walls.

There's all these different things that come out, more installation, more energy efficient, right? Less thermal breaks. All these different things that started happening. I think, you know, there's going to be a bit of a race in my opinion, with suppliers of product manufacturers of the raw to figure out how they fit in. I call it they're going for the pole position right now. So, it'll be interesting. You know, if I'm looking at the industry saying, you know who's going to step up to do this because the one thing offsite construction adds over everything else is it is more sustainable.

It is more energy efficient. It is a better tighter build, right? So, let's see how the manufacturers are going to work with the suppliers to maintain that conversation of how do we get healthier products. You know, how do we have less VOCs and all these different things that people are so aware of now because of COVID.

And I think that's probably where the conversation is going to start heading. I think in the near future.

**Raghi:** Related to that is not only kind of designing based on who's going to be able to manufacture and what it is in capacity, but that's where I'm starting to see some of the supply chain, from a procurement side of things, especially with some of these large corporate owners and things like that, what they are now talking about is, Hey, we know we need to build X number of things, and therefore we don't know when and where and how are we going to do it, but we know we're going to do this many.

So, they're starting to talk to their supply chain partners to say, let's have master agreements in order to buy capacity. Okay, so you'd have guaranteed production capacity so that we can do it. It's really interesting how this whole construction supply chain transformation in terms of from just trade services, being procured to actual supply chain partnerships is being done.

Manufacturing capacity being secured early on in order to ensure you have a smooth supply chain delivery, connected to the design and manufacturing and the production process with the whole visibility and control into this whole thing. It's amazing how all of these may macro things are all kind of starting to come together.

**Dave:** Yeah, they are starting to come together, but there's also a little bit of a needle in the haystack there, right? Because it's opened the door for new product, like hemp. There is a lot of hemp out there now building products that are starting to come online, hemp would have plywood and flooring and hemp insulation.

And just for those of you that don't understand hemp, I'm sorry to tell everybody is you can't smoke it. Yes, it's the same plant. But if you're hemp happy installation, you don't have to worry about your kids breaking open the wall to smoke it because it's not smokable, but you know, that's one of the values of it.

It doesn't burn really easy, which is just contrary to what one would think when you think of hemp. But there are new products and new ways of thinking so when all this disruption in the supply chain happened, lumbers go through the roof and, you know, politics and all the other things that happen get involved that affect all of us out here working every day.

It opened the door for a lot of new innovative products to start coming out of the woodworks and get attention, which I think is a great thing too. With problems come innovation and I think that is awesome.

**Raghi:** So, I think this has been a great chat, Dave, and thank you so much for taking the time to chat with me and share your thoughts with our listeners. We should definitely do it again.

**Dave:** Hey, listen. I love it, Raghi. I think anytime we can all get together and share what's happening out there, everything that you do with the technology that you're bringing to the manufacturing world with Manufacton and all these other things, you know, it's important because this is how we grow.

There is no secret sauce. You know, you may have secret IP in your software and your building technique or something like that, but we're going to get so much further, faster if we're talking and if we're collaborating. So, this is awesome that you were able to have me on the show. I appreciate it so much.

**Raghi:** Thanks. It was great. So, this is Raghi Iyengar. We were talking to Dave Cooper and stayed tuned for our next episode of Know It All.