

Colorado Springs' First Dedicated 3D Printing Company Offering Scanning of Legacy Parts, CAD Design and Rapid Prototyping



Stan VanderWerf
President & CEO
CEM-Tek, Inc.

CEOCFO: *Mr. VanderWerf, what is the focus at CEM-Tek today?*

Mr. VanderWerf: CEM-Tek is Colorado Springs' first dedicated 3D printing company. The three main things that CEM-Tek does are scanning of legacy parts, CAD design (Computer Aided Design), and also printing items for rapid prototyping.

CEOCFO: *What do you understand about the whole concept of 3D printing that perhaps others do not?*

Mr. VanderWerf: In the news there is a lot of hype today about 3D printing. 3D printing is a pretty amazing technology and it is excellent for rapid prototyping and doing rapid design of products for quick entry to the market. However, it does not compete well in mass production. It is still expensive and slow, so it is not really quite there yet, from a technology point of view, for making a large volume of products. However, in the area of rapid prototyping and doing design or production of one off or five off kinds of items, it is excellent.

CEOCFO: *Who is coming to you for services? Are there particular types or sizes of companies or particular industries?*

Mr. VanderWerf: Yes. My company is a contract manufacturing company and contract design company as well. Therefore, I get a very wide variety of clients. My background is in aerospace. I get people from the pet care industry, the healthcare industry and from aerospace as well. I also get inventors that have individual products. I also work with other unusual kinds of clients. Some of these are artists who want to have their artistry scanned in so they can retain the intellectual property of their original art in case it is damaged. Therefore, it is a large variety of different kinds of industries and people from corporations down to individuals and then across the spectrum of industries.

CEOCFO: *Can essentially anything be made with 3D printing today? What are the limits?*

Mr. VanderWerf: There definitely are limits. It is a little difficult to describe what those are. However, in the manufacturing process in the use of 3D printers, it becomes progressively more expensive to get to products that have very high resolutions. Therefore, for rapid prototyping where a perfect surface finish is not really needed, it is actually pretty cost effective. To get down to a plastic component that has the same surface finish as an injection molded plastic part, you have got to use some pretty expensive printers. Therefore, there are some limitations.

CEOCFO: *What is the process when someone comes to you with an idea or with something they want you to copy for them?*

Mr. VanderWerf: I wish that I could say that the process was automated in some way, but typically because there is a design work involved it does require personal or phone call meetings and then exchange of emails and/or information. Then we get into the process of scanning something that you already have or maybe doing a CAD design of the product and then printing that product, depending on what the client needs. I get all kinds of clients. Some of them do not need the printing, they just need CAD design. Others need a full service from concept generation all the way through printing of the prototypes.

CEOCFO: *Why is it called printing as opposed to something else? Where does that come from?*

Mr. VanderWerf: That is an excellent question! Thank you for asking that! Unfortunately, it can sometimes mislead people as to what it really is. That is because we are not a printing company. We do not make flyers for advertising or something like that. However, because a 3D printer deposits either plastic or metal layers onto a three dimensional

surface, one very thin layer at a time, it is almost like printing a sheet of paper, but only depositing the paper in the space where you need solid material. Therefore, it is kind of like printing thin layers of metal or plastic layer after layer. A product that might be only an inch high could have four hundred layers in it. Therefore, it is almost like layers of paper in a way. It is only laying down the plastic or the metal in the area where a solid needs to be made. I think that is where that came from.

CEOCFO: *Does the machine always work correctly? Can a printer jam? Is it seamless? What are of the nuances there?*

Mr. VanderWerf: There are two primary types of printers that you can use. One is what I call the consumer based printer. These are the ones that you can buy for not a large amount of money. Almost all of them are under five thousand dollars. Many of them are starting to get into the under one thousand dollar range. These printers are basically for, maybe families or small organizations and they want to do some prototyping or maybe just give the kids an opportunity to have fun with it; something like that. However, those printers, because of the pricing, did not have many of the technologies embedded inside the printer to prevent print failures. Therefore, these printers will very often have print failures. I would say that maybe one of out of every three prints, for most of those kinds of printers has some kind of failure or some kind of problem. Now, the other types of printers are the industrial printers. These things start at twenty thousand dollars and go into seven figures; million dollar printers. Embedded in those printers is a great deal of technology and process and capability and hardware to prevent print failures. I have some industrial printers and there is one in particular that I have owned of for more than a year and it has not failed a print yet. Now, if you are a company and machine time is critical, then you need to do the proper investing and buy a printer that has a lot of reliability. However, if you know that you are doing it just for fun at home and a print fails, then it is not necessarily a critical issue.

“CEM-Tek gives people and companies an ability to get to prototypes at a much lower price and helping clients is totally a lot of fun for us!” - Stan VanderWerf

CEOCFO: *3D printing is a hot item these days. How do people find CEM-Tek?*

Mr. VanderWerf: We do not do national advertising. It is just too costly. I did it for a while and it did not really produce any value for me. I have done a lot of advertising locally where I live and that has been very effective. I have got lots of people coming to me who have concept ideas or just need a print or something like that. I do stuff for those folks all the time. Where my market is growing very well is in Colorado. Other ways to get hold of me is to go on my website, www.cem-tek.com. Then of course, a client can always just call our number, which is 719-640-8879. We will be happy to talk to you about what you need done.

CEOCFO: *Are you local because people want to come in and meet with you in person or is it just that people like doing business with someone local, maybe particularly in this type of service?*

Mr. VanderWerf: I would definitely say that there are people that do want a personal interaction. I definitely sense that that is helpful. However, I would say another good reason for maybe a local market is that sometimes it just takes time to explain to a client how 3D printing can be valuable for what they want to do. Sometimes 3D printing is not the best approach. Therefore, it takes a little time to explain that. It is not as simple as going to stores to buy a reading lamp for your living room. 3D printing is a little bit harder for people to understand. It is a new technology and it takes time to really get the understanding about how it can produce value for someone. Therefore, that personal interaction becomes the vehicle through which the client can understand how 3D printing could be useful.

CEOCFO: *Do you help a client to work through what materials they should use, possibly altering the design because you know from experience that something might be better? How do you work with clients to enhance their ideas or make them workable sometimes?*

Mr. VanderWerf: That is absolutely one of the things that we do. In fact I just finished a task, and I will not get into the details because I am under a non disclosure agreement, but it was a pet care product. The client had gone to a couple of different design teams and those companies did not really deliver the design this client was after. She already had a Computer Aided Design set of files. She gave me a series of things she wanted to have changed. We discussed that with her and talked about what we thought would work and would not work. My engineering team did some analysis with respect to that. Then we made those recommendations and actually, in this particular case, she accepted those recommendations. We then made the design changes. In this particular task we did not make any material products but instead refined her existing design. Part of the problem with the original design was that some of the plastic parts were in fact interfering with each other when they were operating and we needed to address that issue. Therefore, we changed

some of the design; nothing big, but enough in order for the prototype to operate correctly. So the answer is yes to your question, we definitely do that.

CEOCFO: *Do people have a concept of the cost of 3D printing or are most people still in the learning stage?*

Mr. VanderWerf: We get all manner and types of clients. Some, bless their heart, have no idea and others, maybe even in the industry, or as the chief engineer of a manufacturing company, may have a really good idea of what things cost. With 3D printing and CAD design, the printing is expensive from the point of view of the materials cost and CAD design is expensive from the point of view of labor cost. Therefore, sometimes if you are just an individual citizen and you have had a widget idea for long time and you want to have it made, it may surprise you, depending on what it is, that it may take anywhere from a few hundred dollars to several thousand dollars in order to complete that design. Sometimes that does surprise people. On the other side of the coin, when someone is trying to get a product to market and they go to a plastics manufacturer and ask for a quote to have the molds made to make the different plastic components, they discover that molds are very expensive. Depending on what you have it could range anywhere from a few thousand dollars for the molds to six figures. It depends on how many parts you have and how complex they are. 3D printing works well in the middle space between not being able to get to a product at all, and operating at prices that are less expensive than making molds for plastic parts. In that middle space it is more expensive than the uninitiated typically think, but it is a lot less expensive than mold production line setup.

CEOCFO: *Do you need to keep a large inventory of materials and does the cost fluctuate on what you are using much? Is it a consideration?*

Mr. VanderWerf: Yes. As far as consumables, the plastics and so forth, yes I do maintain an inventory. The inventory is basically filament wire or plastics for the different printers and then I keep a variety of colors, about fifteen different colors for clients to choose from. I also actually supply filament for people that are in the local area and deliver that filament to them. In fact, one of my clients is the Colorado Springs Public Library Systems. They have 3D printers in their facilities and I deliver the filament for them. As far as materials and prices, yes it can vary quite a lot. Depending on the printer that you use the materials can vary in a wide range of pricing. The more expensive printers use more expensive cartridges for their printing, so they cost much more. Then when you move over to the metal side, the metals are just that much more expensive than the plastics.

CEOCFO: *What surprised you as CEM-Tek's 3D printing business has grown and evolved?*

Mr. VanderWerf: First of all, it is totally fun! I really enjoy it! Sometimes I am challenged. Sometimes I have a client that has a very difficult task and sometimes they are hard to deliver. I have delivered everything that I have been asked to deliver, but sometimes they have been big challenges. Therefore, I worry about always being able to deliver to the client and that is something that every business person should worry about all the time. I would say that I also worry about all of the regulations and laws that you are required to comply with. There is a lot and it is not always that easy for a small business person to know all of those. Therefore, you have to figure out how you deal with all of that; maybe you hire expertise or what have you. Those are some of the things that I worry about.

CEOCFO: *Why should people choose CEM-Tek?*

Mr. VanderWerf: I would say that we provide personal service. We will talk to the client as long as necessary to help them understand why 3D printing might be valuable. We will also tell them if it is not appropriate for their needs. If they need other types of services and we do not offer that, we will give them referrals. We deliver on the task that is given to us and we like working with clients. Also, I am very excited about helping inventors and others get their products into the market. Many great product ideas do not get there because the injection mold prices scare them off. They find out what it really costs to make a part in traditional manufacturing and they end up not moving forward. Therefore, CEM-Tek gives people and companies an ability to get to prototypes at a much lower price and helping clients is totally a lot of fun for us!

Interview conducted by: Lynn Fosse, Senior Editor, CEOCFO Magazine



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