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Innovating In Sustainable Building Materials: Hycrete CEO David Rosenberg

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David founded what is now Hycrete, Inc. in 2002, when he joined his family's specialty chemical company. His family has been involved in inventing and manufacturing novel specialty chemicals for over 30 years. David still works closely with his family in both research and development and manufacturing. David is a leader in sustainable construction.

SM: Let's start where your story begins. Where did you grow up and what was your family like?

DR: I grew up in New York City as a third generation Bronx kid. I went to North Carolina for college and then came back after college. I was in finance with different Wall Street stuff and the moved to one of those two year analyst programs. After that I moved to a venture capitalist incubating firm based out of New Jersey.

I was on the US traveling fencing team for a while and tried to make the 2000 Olympics. When the US did not qualify a team for the Olympics I applied for Business School and ended up going to Columbia where I currently guest lecture frequently.

After Columbia I basically started up Hycrete. My family has been in the specialty chemical business for 30 years. My grandfather led the innovation of several pretty cool technologies. One was solid rocket fuel where he got an award for the T3 rocket by NASA. He was instrumental in the development on the heat shield of the Apollo series which is most notable on the Apollo 13 when it came through orbit. He also worked on some materials used on the Space Shuttle Columbia.

SM: How much exposure did you have to this business when you were growing up?

DR: A moderate amount. When we went over to his house he had a pool table in the basement which we could never play pool on because he was always mixing chemicals on the pool table. I was the oldest boy grandchild and I grew up very close to him. He was always showing me things and was very hands on. I spent my summers with him at his country house.

SM: With that background it is interesting that you went into finance. What drove that?

DR: My dad was a Wall Street guy. My father helped my grandfather get financing to build his company. He was the managing partner of the largest municipal finance law firm. He would

represent the State of New York or cities and authorities. He would help get the financing together to build parks and subways.

SM: How big was his company?

DR: It was dedicated to niche markets for the department of defense and NASA. It was not huge in terms of revenue. They did very high end, niche projects.

SM: What year was it that you decided to found Hycrete?

DR: It was in 2002. I tried starting another company in Business School which was a B2B ecommerce company. It failed.

SM: How far did you get with that company?

DR: It was a pre-revenue business when it closed its doors. We did not raise capital. I would argue that we had a product and a solution. It had to do with selling ads over the Internet.

SM: When did you start Hycrete?

DR: I did a six-sigma training program at Honeywell for a month and a half after my MBA and could not stand it. My grandfather passed away and at his shiva I spoke with my uncle and cousin who were also in the family business. That is when the Hycrete opportunity became apparent. The business was having a tough time and my uncle shared this technology that was developed in 1995 and nothing was happening with it.

I saw the test results and they seemed interesting. My uncle invited me to take it on and make something out of it so that is what I did. It was not a fit working in my family's business so I spun it off on my own. I was one of those guys going two years without a salary trying to make this happen.

My grandfather developed a water molecule that would repel water, much like water and oil repel each other. That is very unique. This changes concrete from a hard sponge to a waterproof material. I immediately thought that people who owned structures for a long time would appreciate it. It was developed as a corrosion inhibitor and the side benefit was a long hydrocarbon chain that was reflective of the property of oil.

I started trying to get into the infrastructure market. I got into projects at the Connecticut DOT, the New Jersey DOT, the Ohio DOT and Kansas DOT. I did not have money so I had to rely on Universities and DOTs to pay for the testing that they wanted done their way.

SM: What kind of money were you able to get the DOTs to pay you for the tests?

DR: They did not pay me anything, but they paid for the tests. A lot of DOTs had their own testing labs. I either got them to sponsor the testing themselves or I got universities to do the testing.

SM: At that point where you still operating solo?

DR: Yes.

SM: Who was supporting you on the technical side?

DR: I got very knowledgeable on the technology. I started this in 2002 and in 2003 I was delivering a paper in front of the Transportation Research Bureau which is all the technical leaders of the DOTs throughout the country. I was giving them a very detailed technical paper to the crowd. When you are doing it all you must make yourself and expert.

SM: How did the results of all those test turn out?

DR: They were very favorable. There were a bunch of competitive tests. Our product was tested against other technologies. There is a software model that predicts lifecycle analysis. It tries to answer the question 'How long is this going to last?' using three competitive technologies in tandem. The best case results are in a highly corrosive environment 17 years. Our material had an outcome of over 190 years. It was a multitude better than other competing companies.

Before us the philosophy of how to keep moisture out of concrete was to densify it. Concrete is a hard sponge and has a network of capillaries. People would try to fill it up with fine dust to block or close the pore size. There is a rule in physics which states you can shrink a capillary but actually increase capillary absorption. Denser concrete often had higher absorption readings.

Our approach does not change the porosity. It makes it hydrophobic. It completely shuts down capillary absorption. The results were fantastic as a corrosion inhibitor. I then started selling to DOTs. The value proposition was that their bridge would last 100 to 200 years instead of 20 years.

SM: Did any of the DOTs respond to your value proposition after the bridge collapses?

DR: People have said that they have never seen a technology get traction so fast. Within a short period of time we were getting into projects with many DOTs. Most were in demonstration projects. To get into habitual business they put us into a category as "Material Approved for Adoption".

SM: Didn't you have to finance some production along the line? How did you do that?

DR: I outsourced manufacturing to my families company.

SM: That allowed you to produce all of the necessary materials to manage the pilot projects?

DR: Yes. My Uncle was able to help me. There was not a lot to finance because they had existing infrastructure to manufacture the material.

SM: Did you get paid at all for the pilot projects?

DR: They paid us for the materials used in the pilot projects. We did not get a lot of revenue but we got some revenue when these projects came in. What I learned from a business plan is that selling durability was a very tough sell. There is very much a "buy IBM" mentality within the DOTs. There has been aversion to taking risk and innovating. People like doing what they are used to doing and it was a very tough process.

We would be put into a bucket of "As Equal" and contractors would just take the cheapest material in that bucket. We were trying to raise the bar of performance and raise standards. It was very hard to get sales. I got a government grant from the New Jersey Economic Authority for $500K which allowed me to hire employee number 1 and 2.

I then got venture capital money and very quickly took the company in a complete 180 shift. Seeing that the infrastructure market was going to take a long time to adopt, I had to adopt as well. We had a material that made concrete waterproof. What the customers want is waterproof concrete construction. We had a liquid material that you could poor into the concrete while it in liquid form in the truck which would make it waterproof. I realized that we could develop a system for waterproof concrete construction. Concrete cracks, so how do you address it? If you have a pipe penetration that is a vulnerability, so what can you do? There are a lot of areas that are vulnerabilities to construction.

If we had a way to remove those problems then we would have a deliverable that removes the biggest pain in construction. Waterproofing is the most litigated pain in construction. Everyone hates the water proofer. We have developed a system with our technology and service of removing that whole step of constructions. Typically, because concrete is a hard sponge, you poor the concrete and then you wrap it in a membrane or coating that acts as a water proofing. We have addressed that flaw and covered all of the other issues such as cracking and pipe penetrations.

Construction is very sequential. You cannot do step C until you do step B. We have, in essence, removed step B. Our value proposition went from making bridges that would last 100 years to faster construction, lower cost by removing a process, and a higher quality of construction. In the commercial space that works very well.

There is also a clean tech value proposition. About 11% of our landfill is concrete. The exterior high toxicity wraps we put on concrete make them very difficult to recycle. Our system makes it more sustainable. There are a host of environmental reasons why our system is better. One of the mantras of sustainability is "do more with less". I can't think of another product or technology that eliminates a whole step from construction.

Since we have figured out this piece for commercial construction our business has just taken off.

SM: Was the funding you raised from venture capitalist based on your value proposition of durability or was it based on your value proposition of waterproof construction? Can you tell me about your funding strategy?

DR: Our A round, which was in the single digits, was based on the durability business model. We raised that funding from a small fund in New Jersey. We used that round to validate our technology and its effectiveness in applications.

We made the changes to our business model before we raised out B round. That round was led by NGEN and Rockport and was also a single digit round, and this is the round that proved our business model worked. We went after the best advanced material and clean tech funds which were Rockport and NGEN.

Our C round was led by Mohr Davidow and was a double digit round, and this round was done with expansion in mind. Our goal with this fund was to bring in one of the best generalist funds. It became apparent to me after talking with many people that there is something special with the big generalist funds in Silicon Valley. They are really good at building great companies. Our goal is to build a really great company. Once we set the goal of having a billion dollar company, decisions are simply different.

SM: Can you give me an example of how those decisions differ?

DR: When it came time to get a VP of Sales we brought in a big shot from Oracle. That is very different than what you typically see in our industry, but we consider ourselves a technology company and he has a history of scaling up technology companies. He is good at selling innovation in a consultation sales process. He did not know a lick about concrete but that has changed in the 5 months he has been here. We have a world class management team which is something Mohr Davidow has helped us put together.

SM: Who do you sale to today?

DR: Right now we focus on commercial construction. With al the infrastructure spin we are starting to put more emphasis on infrastructure. We have nine US locations and three international locations. We focus on decision makers and influencers. The building owner, developer, engineers, architects, contractors, and concrete producers are all people we spend time with. We spend most of our time with general contractors and architects.

SM: How many clients do you have today?

DR: We have done about 150 projects, and we go into very big construction. Our first project with Microsoft was a fountain outside a building. We then did a roof over a mechanical room followed by an 8 acre green roof. In 2010 we are going to be doing a couple of more buildings. We are going into the Bill and Melinda Gates foundation. This year we are going into the Nintendo headquarters and the Amazon headquarters. Our focus is big construction. Our repeat customers are the largest contractors in the world.

SM: When you look at the 150 projects you have been a part of, have you noticed any patterns in regards to who your early adopters are?

DR: Our value proposition has led to great word-of-mouth advertising, which is how people are finding us. I speak at a lot of cleantech conferences as well. It is very hard to get adoption in the construction industry, and we are getting that adoption because our value proposition, [from] day one, is less expensive than the alternative. We are better, faster, and cheaper; plus we are green. For every project we do, we can quantify how many pounds of organic compounds we saved, how many pounds of petroleum-based material we saved, how many pounds of potential landfill we saved, and how many man hours we saved.

SM: Can you talk a bit more about the sustainability and green value proposition in your material?

DR: One of the mantras of sustainability is do more with less. By eliminating an entire step of the construction process, we increase productivity and prevents a quantifiable amount of activity on a job site.

There is now a greater appreciation for extending life cycle costs in the US Green Building Council. Our durability features mean you do not have to maintain the material as much and you have lower maintenance costs.

There is a tremendous amount of waste on a construction site, not just [in terms of] which materials are shipped to the site, but on the backside there is a lot of waste when you take a building down. Concrete is sand, water, cement and rock. It should be a reusable material, not a material taking up 11% of landfill space. However, because it dissolves salts which are carried into the concrete's water, it is significantly harder to recycle. By keeping out the dissolved salts we make concrete much easier to recycle.

SM: What happens today with concrete that comes out of demolished buildings? Can that material be re-used at all?

DR: Most of the time it goes to landfills.

SM: What is the impact of that? Does concrete make the land over a completed landfill unusable?

DR: It makes it harder to use. It could mean less usable space or more toxicity getting into ground water. There are also shipping costs to get heavy materials to disposal areas. I have been pretty active trying to educate the new administration. They have had such a focus on our carbon footprint, and it is extremely important to reduce our carbon footprint.

I am speaking at the planning committee for COP15, which is going to supplant the Kyoto Protocol which expires in 2012. We are trying to get developing and developed countries to sign onto something meaningful. There is a loss of focus on important issues like pollution and how we lower waste. The construction industry has a huge negative environmental footprint. What I hope to see out of stimulus spending are shovel-ready projects. They need to be tied to incentives to invest the right way to raise the bar of performance. Design a bridge to last 200 years. Build a

building with fewer trip counts. Use less waste on a construction site. We have to invest in our future; we cannot just spend our way out of this recession.

SM: The new administration is counting on construction projects to create more jobs. One of your value propositions seems to require fewer construction jobs.

DR: A Congressman made that same point. I can take a brick and throw it against a window to create a job opportunity for replacing a window. That just does not make sense. Let's use the money and build another school. There are a million things we can do with this money. If we are saving money in one area, we are increasing productivity in another area. That will push our economy. That will turn regular laborers into high technical skill set laborers.

SM: Do you provide anything other than materials to construction sites?

DR: We provide materials and services. We do not do the construction but we are involved in the design and implementation side. We are constantly educating contractors about the new paradigm in construction.

SM: They are your version of sales engineers.

DR: I think that is a fair categorization.

SM: Where are you at in terms of revenue and the financials of your business model versus other options available to contractors?

DR: On a square footage basis in the US, we sell for under $4 per square foot. The competition is typically $5-$8. We are typically less costly than traditional waterproofing systems. Our average project is six figures, and so far this year we have gone into 20 projects; by year's end that number will likely be around 50. We just went from five to nine locations.

SM: Are you referring to your office locations?

DR: I mean where we have people and are doing projects. In the US that is Seattle, Northern California, Southern California, Utah, Denver, Florida, Washington, D.C., New York and New Jersey. This week we are doing a project in Texas, so we had to send some folks there. Internationally we have people in Eastern Europe and the Middle East.

SM: What is the thinking in India right now in terms of green construction?

DR: The whole country is under construction, and a lot of it is concrete. Right now China is leading the world in concrete usage but it is eventually going to be India. The quality of construction is below what we see in the US, and that makes quality control challenging. They also use very cheap materials unless it is a high-end project. At the high end there is a growing appreciation for quality construction. It is very different when you go to a construction site and see people walking around in sandals and no hard hats.

SM: Your market in India is obviously limited only to high-end construction. Unfortunately, I don't see the low-end market adopting the high-end materials. The cost structure there just won't permit it.

DR: True. There is so much construction going on at the high end that it remains a very large opportunity. There are a couple of private equity firms that want to buy a Hycrete India office or do a joint venture with us. We are exploring it because it is a tough country to manage.

SM: How you do business in India is very different, right down to how you get into projects.

DR: The Sun Group, a bunch of ex-McKinsey guys want to help invest in Hycrete India. From my standpoint, India takes a lot of management bandwidth.

SM: It may not be a bad idea to do it as a separate company and leverage others to focus on such a challenging construction market.

DR: If I can get bright people investing in the company it may not be a bad idea. That is something we have to explore more.

SM: How big is the TAM in the US?

DR: The concrete market is a $300 billion market. If you slice that into waterproofing and commercial construction, then that number becomes smaller. One of the bright spots in our business is that our customers are using us in more parts of the structure.

SM: If you slice the market into commercial and waterproofing, what does the TAM come out to?

DR: I don't have a good number for you, but it is a big number. Right now that is hard to say.

SM: Is there anything I should have asked you that I did not?

DR: The biggest thing is that our customers love us. They have become our biggest advocates.

SM: You are getting good word of mouth within the construction space.

DR: It is so meaningful, because general contractors work on such slim margins. We can affect their bottom line and reduce risks with a high-end warranty. That news has spread fast. Even though the construction industry is down, we are growing significantly this year. The value proposition is very strong. Last year our most meaningful value proposition was risk reduction. This year it is cost reduction. That is really helping to drive sales.

SM: I also just did a story on Serious Materials. It is very interesting to see that materials have started to gain substantial traction in the past few years.

DR: Kevin and I are both fortunate in that we both just had a big raise. Hycrete has an extremely healthy balance sheet. I believe Serious Materials has a great balance sheet as well. That allows us to invest in growth. A lot of players in the cleantech space, with the freeze of capital, may find the overall excitement for the industry drop. There are a lot of inefficiencies in this industry.

SM: You're right. These are pretty long gestation, capital-intensive projects. Right now the market does not supply a lot of capital and is pretty risk adverse. People who do not have a proven technology are having a hard time.

DR: The time to adoption is so long which does not fit the fast-scale venture capital model. What made us successful as a venture capital model was the ability to create a value proposition that was better, faster, and cheaper.

SM: You also did a lot of the R&D and pilot phase by leveraging family resources and government grants. You waited until you had your ducks lined up before you got into the venture capital cycle. That is a key takeaway for entrepreneurs who are trying to do long gestation projects. You want a proven value proposition for the venture capital phase.

DR: Excellent observation. Even with our first round being focused on durability versus waterproofing, what made the first round successful was the TAM. We were looking to correct the flaw of a worldwide $500 billion industry.

SM: TAM is one of the biggest draws of venture capital, no doubt. I think sales cycle, time required for proof of concept, time to market, and time to validation are big issues investors take into consideration. That is where the cleantech industry has scale challenges.

DR: Good point. I think you have succinctly captured the many issues our industry faces.

SM: Thank you as well. This has been a good story; many congratulations.