

Brian Gresser of Akron, Ohio;  
Chris Boeman of Schmack BioEnergy

Boeman: Right, you know all about that. By way of an introduction, your name is Brian Gresser and you are the Water Pollution Control Administrator for the City of Akron, Ohio. The City of Akron this week announced that their sludge plant is the first in the nation to create electricity by burning biogas produced in an anaerobic digester.

Gresser: Actually, the media is saying that which is somewhat inaccurate. We're saying that but we're the first to do it with high solids digestion. I think some people are getting confused. We're not touting this as the first because we know we're not the first to generate electricity or another type of energy from biogas or methane gas from digesters. We're doing it a little bit differently using high solids digestion versus low solids digestion.

B: Thanks for pointing that out. What is your role as Water Pollution Control Administrator?

G: I oversee the operations and administration of Akron's waste management plant. I also oversee the industrial pretreatment program and our environmental compliance...regulatory issues with Ohio EPA. I also oversee the contracted operation of the composting facility. That's with KB Composting.

B: For those who aren't familiar with municipal waste treatment facilities can you give us a summary of a wastewater treatment plant and its operations?

G: Generally the wastewater treatment plant receives wastewater from the community. This is basically water and dissolved solids and it's the responsibility of the waste water plant to separate the water from the solids before discharging the water into a water way and taking the solids that have been separated out and treating them by regulation so they can either be landfilled or incinerated or turned into compost or digested or whatever to meet the regulations.

B: Go on.

G: Akron is somewhat unique in that the water functions and the sludge functions are somewhat bisected by the receiving stream...the Cuyahoga River. So we refer to things as on our side or their side. The majority of the waste water processes are on this side of the river and the sludge is pumped under the river to the other side and that's where the de-watering and composting takes place.

B: And what is an anaerobic digester? I'm more familiar with the anaerobic digesters installed on farms. This is my first foray into learning about anaerobic digesters at sludge plants.

G: Actually, it basically operates under the same premise. You've got organic material that you're putting into the digester. It's not unlike what happens within humans where in the absence of air the bacteria break down the organic matter and generate an off gas called bio-gas or methane. The bacteria stabilizes the organic material. The remaining solids have to be dealt with

in another way. In our case, the solids from our anaerobic digester are going to be pasteurized. We're trying to develop some kind of market for the residuals following pasteurization.

B: From my understanding, the digester is part of an effort to upgrade the City's composting operations. Is that correct?

G: yes.

B: What alternatives did the City consider prior to choosing to put in a digester?

G: We used to incinerate sludge here in Akron from the late 40's up until 1993 I believe when we shut our incinerators down. We kind of just focused our efforts on anaerobic digestion because the energy situation in the world the way it is today and knowing that the sludge does have some opportunities to exploit the energy that is contained in the solids. That is why we focused on anaerobic digestion. What is interesting is that we used to digest sludge back in the early 40's up until the 60's and at that time, because of cheap energy in this country for the most part, the methane gas was just flared off. They kind of bounced around. They tried a process that was called Zimpro, which was an oxidation process to stabilize solids and then in the mid-80's they decided to go to composting. And that is what we've been doing ever since.

B: Why did the City decide to go with Schmack's anaerobic digester technology?

G: It was something that has been reported in the papers. It was something that the Mayor was introduced to in one of his travels in Europe and...

B: So that was a Schmack facility that he saw?

G: Yes, one of the ones that he saw was a Schmack facility. He did see a different process that was in, I believe, Switzerland, but basically it was the same kind of process. And why Schmack? I think it's because of their ability to take higher solids into their system which then parlays into less required area for the operation.

B: Were there any other anaerobic digester providers that the City considered? And when I read these questions back to myself I thought it may sound like I'm trying to trick you or something because I understand how bidding out projects goes. I'm just interested in the industry.

G: What really intrigued us was the high solids digestion and after our cursory review of the technology that was out there Schmack was really one of the only ones that was doing that.

B: Okay. And also from my research Schmack has roughly 200 successful projects in Europe. It's a start-up here in the sense that it's the first facility for Schmack BioEnergy but it's not by any means the first facility using Schmack's technology. In an article announcing the start-up of Akron's anaerobic digestion facility, Mayor Plusquellic said it would have "wide-ranging benefits" for the City. What do you see as the benefits accruing to the City of Akron from putting in this anaerobic digester?

G: I think the benefits are many. We're getting to the end of the useful life of the composting operation. Enclosed composting operations are inherently corrosive because of the off-gassing and the moisture that is involved in the process. The facility in Akron has been in operation over 20 years and we are seeing quite a bit of corrosion in the systems inside the reactor area. One reason also, we're very conscious of odors and while we spent a lot of money, both City money and grant money, to address the odor issues, we felt we did a good job addressing odors that were generated inside the facility but with the operations that we use there is some amount of activity that has to occur out doors and that is where we generate additional odors. We're feeling that this anaerobic digester process, since its enclosed in tankage and what not, that being contained we're going to control the odors a lot better. One of the other issues is just escalating costs. The composting operation requires materials that are out of our control. For example, we use quite a bit of saw dust in the operations. And saw dust, while it used to be a waste from lumber operations, is now a commodity and its demanding higher prices. Its being used as a fuel source in energy projects to generate electricity or steam or what not.

B: I had also heard that they were exported saw dust or wood chips to China.

G: It wouldn't surprise me. When you think about it, go to a Home Depot or Lowe's and pick up a toilet seat. A lot of times it's a pressed wood type material. A lot of that is saw dust or other wood types that have been bound together with adhesives. The saw dust material is being pulled into many other kinds of markets. It's driving the price up and its effecting our costs and there's nothing we can do about it other then pay the higher costs.

B: Or start cutting down the City's trees. That probably would not be a politically expedient thing to do.

G: So there's a lot of different things. Fuel is a big component. The price component affects our use of polymers and other coagulants. There's a lot of outside parameters so that with the anaerobic digestion process we're going to have more control over our own destiny. Because we are not...

B: At the mercy of the market?

G: Yes. At the mercy of these other products that we need in the composting operation.

B: In dollar terms, what value does the City put on the electricity being generated by the burning of the gas produced by the digester?

G: We really haven't put a dollar amount on it because the system as it is installed right now is basically sized to treat one third of our sludge. It was done that way just to insure that this process was doable. We wanted to learn from this pilot project so that when we do go full scale we may make some changes along the way. So we don't want to go full bore right out of the gate. We know that the electricity is a benefit and we know what it is capable of generating. Initially its going to be used to off set continuing composting operations and if we do go full scale the energy that is generated as part of a full scale operation would be much more then what the system is capable of using. The electricity is wired across the river to the waste water

treatment area and we would use as much as we need before it actually leaves the facility and goes out on the power grid.

B: Has the City looked into generating tradable carbon credits from the digester as an additional revenue source?

G: We have not done that yet, no.

B: Has it been something that has been talked about? I'm somewhat familiar with carbon credits but I'm not that knowledgeable about them so I don't know whether or not they can be earned from this type of facility.

G: Quite honestly, no, we have not gone that far yet. We know that that's out there and there's all different types of energy programs that we may be able to take advantage of on a full scale operation but we just felt like with this initial phase we just want to make sure we have sustainable electricity generation before we get into delving into carbon credits and those sorts of things.

B: Prior to the City putting in the anaerobic digester, were any attempts made to capture the gases produced by the decomposition of municipal sludge?

G: No.

B: So that would be an added benefit in the digester. From my understanding those gases are being produced whether or not you have a digester. They are just being released into the atmosphere. Is that correct?

G: Yes, the majority of the composting operation occurs inside and all of that off-gassing that occurs in the composting operation is channeled to our odor control system.

B: So it would be flared off?

G: There's really no flaring per se. Its more treated for odors, it's a wet scrubbing type system that we hit with sodium hypochlorite in an attempt to try to minimize odors. If there was a methane component that was coming off we were not capturing it, no.

B: What role, if any, did environmental concerns play in the City's decision to install a digester?

G: The proposed system is not just your typical AD system you may find in a lot of other municipal waste plants throughout the country. So we did have to work with Ohio EPA in accepting the system. We submitted the permit to install and Ohio EPA was very receptive to the technology and put forth the resources to really turn around our application quickly. They've been involved so far with the construction.

B: We find on dairy farms or on other farming operations that a digester will be used because there is outside pressure on the dairy farm to alleviate some of their odor problems or to alleviate

some of their waste management problems that are associated with manure. But that wasn't really a driving force behind the City's decision?

G: No, the composting operation meets all Class A parameters. There was really no outside pressure on us to go to something other than composting other than our own internal pressure to try to stabilize costs and address the aging infrastructure over there.

B: From my understanding, this anaerobic digestion facility cost about \$7 million and the City put in about 10% of the cost. Under its agreement with the City, KB Compost Services designed, built, and will operate the facility. Is this essentially correct?

G: Yes.

B: How was the other 90% of the project financed?

G: That's the unique part of this. KB brought this technology to us through their dealings in Europe and with the Mayor seeing the technology, they wanted to make this project go just as much as the City wants to make this project go forward. And basically the City component of the financing is being generated by revenue that the City was previously getting from the sales of compost. So we basically turned that revenue from the sales of compost back around and that is the City's investment in this project and that's where the 10%, plus or minus, is coming from. The remaining monies are coming through KB Composting Services through their financing that they were able to obtain from local banks and the Summit County Port Authority. And the way the contract is written, there are some performance requirements that have to be met during the start-up phase through the testing phase and if those performance requirements are not met then the City's financial obligation stops and it would be up to KB at that point to determine what would happen with the AD project. It's unique in that KB Composting Services is shouldering the majority of that short term risk in making this project work.

B: do you know how much of those monies are being provided, if any, by Schmack Biogas, AG?

G: I don't know what that amount would be. I'm sure you could tell by your research that Schmack Biogas AG in Europe formed a company with folks here in the states, part of which was KB Composting Services, to form Schmack BioEnergy. There may be some financial part from Schmack Biogas Ag but I'm not sure what that is.

B: Okay. You kind of touched on this but, what role did the Summit County Port Authority play in financing this project?

G: I don't really know a whole lot about that because the financing was pretty much arranged through KB Composting Services. I'm not sure how much but that is probably public information if someone went to find out but I'm not sure what the dollar amount was or is.

B: The article announcing the start-up of the digester states, "Following an 18-month performance evaluation period, if successful, the parties will negotiate a new contract and

potential expansion of the system to process all of the sludge.” In general terms, what criteria will you use to determine whether the digester is ultimately a success or failure?

G: The parameters that we’re looking are gas production, a minimum CFM specified...

B: Can you define for me CFM?

G: Cubic Feet per Minute. A specified cubic feet per minute of gas and sort of a subjective sustainability of the project. Is it operating more than it is down? It is somewhat of a subjective determination but there are some objective parameters that have to be met to say “yes” that it’s a success and we move forward or if it does not move forward the City’s financial obligation stops. It would be up to KB at that time to determine what is the next move.

B: Do you know what the CFM is?

G: I want to say 73 CFM.

B: If the project is successful, the City is considering expanding the digester facility to handle all of the City’s sludge. I’m assuming this would mean building two additional digester tanks. Is that a correct assumption?

G: Yes, I don’t think we would necessarily need to inch forward to what our total capacity would be. For example, I don’t think we would need to go to 10 thousand dry tons a day and then ultimately go to 15 thousand dry tons a day which would be 100%. I would think that if this initial phase is successful and we know the direction we want to go then we would probably go from 5 thousand dry tons a day all the way to 15 thousand. And perhaps even more. There were some discussions that this technology would be very suitable to processing outside or merchants’ solids or we could bring in solids from other waste water treatment plants or even outside entities, like for example, food processing or drink manufacturers. Any type of food waste that has any kind of organic matter that could be co-mingled with municipal sludge. So we could go even further then going to 15 thousand to a little bit more.

B: So at this point it seems like you’re telling me you build out to the point where you can handle your existing sludge but if it is successful you can build it out to bring in even more sludge that you’re not currently handling.

G: That’s the nice thing about this process. It’s very modular, just kind of the duplication of smaller units to the capacity that you need.

B: Knowing what you know about other municipal waste treatment facilities, if this project proves successful do you think other municipalities will follow Akron’s lead and install anaerobic digesters?

G: Yes, I believe so. I know for a fact that Schmack BioEnergy has proposals out there to other municipalities or agencies to install this type of technology at their locations. I know the City of Columbus is also considering this technology as well.

B: What factors should a municipality consider before investing in an anaerobic digester, from your position?

G: They need to really consider this high solids option if it proves successful in Akron. Obviously tankage is very expensive to construct and if this technology pans out it should really drastically change anaerobic digestion in this country because of the smaller footprint that is required. There are a lot of treatment plants that are shoe horned into location and land is not as abundant as it is here in Akron. But if it's a technology that proves successful for these locations that do not have available land it definitely would be a technology worth looking at.

B: That is one of the things that I've learned to appreciate when researching anaerobic digestion. If you have a digester tank or digester system that can handle 5% solids and then you have another that can handle 10% solids, that means you need half the size for your tank. So it is such an advantage to be able to handle a larger percentage of solids. What percentage of solids is this system designed to handle?

G: The input solids are designed to go in at 15% to 18%. One other option too, the Euco, it's rectangular in shape, lends itself to be stackable so you can go vertical in installation so you can save additional space.

B: Other than municipal waste treatment facilities, any other sorts of waste generators that you think should consider an anaerobic digester such as the one Akron is installing?

G: To my knowledge, the basis for the majority of Schmack's installations in Europe are based on farming operations, so obviously cattle or chicken farms that have manure. There are also installations over there that are running only on silage to produce electricity. So there are farmers that are installing these systems and feeding them silage to create electricity. But there are also, as I mentioned, opportunities for food waste.

B: Whenever I hear about the food waste...I'm actually from the Cleveland area...I remember where a plant that processed food put out just tons and tons of lasagna that something had gone wrong with and they didn't have anything to do with it. I think if they could have digested that and generated some biogas then you could have saved yourself a real problem.

G: There was another local company that took expired beverages and overloaded one of the local treatment plants because of their BOD loading. They were actually trying to produce ethanol through a fermenting process from that waste but that kind of waste may lend itself to an AD process as well.

B: I'm at the end of my questions. Anything you'd like to add? Anything that I've missed that you think is important for those researching anaerobic digestion?

G: With the emphasis here recently on energy and the sustainability of our resources in our country, I think that anaerobic digestion technology and the beneficial use of the biogas really goes a long way. Government needs to set an example for a sustainable community in their energy consumption. I think the anaerobic digestion systems and the beneficial use of the biogas

is a way for the community to demonstrate what they're trying to get their community to represent.

B: I agree totally.

G: It goes towards a community's green initiatives and green is in. A lot of communities and politicians can leverage the good things that come from biogas projects.

B: And it wouldn't be a bad thing for the Mayor to be able to say he's removed large amounts of odors coming off of his municipal waste treatment facility.

G: I'm trying to be cautious in not saying we're going to eliminate all the odors although that is our ultimate goal. We are dealing with a waste water plant and the odor is something that comes along with the business but if we can reduce that amount of odor just to lessen the impact on our neighbors then that's a good thing.

B: And if you reduce the odors you probably increase the real estate values in the general vicinity.

G: Where we're at we're pretty much surrounded by national parks and metro parks so we don't have a lot of high dollar real estate real close by but we do have some close by neighbors that have been here a while and we're conscious of the fact we don't want to effect their quality of life.

B: I really appreciate you taking the time with me this morning. Thanks a lot.

G: Thanks Chris.