

Q&A on Biomass Handling and Conveyors

This week, Dane Floyd, president of [Biomass Engineering & Equipment](#), answers some questions on biomass and bulk material handling.

Q: Why would any facility move material around with a wheel loader when bins and conveyors are more efficient?

A: Why do the Amish use buggies? Someone thinks it's a good idea. Seriously, though, I think this just came about naturally as the most flexible and reliable way before they had a better option. A wheel loader does provide a lot of flexibility. You can blend materials on any concrete pad. You can feed multiple bins. You can build piles by pushing material up. You can make as many piles as you want and put them anywhere. You can even plow the parking lot in Wisconsin or grade the driveway in Georgia. It was always easy to just lease another loader as a backup, too.

But over time better systems like ours ([SMART Containers](#), [SMART Conveyors™](#)) were developed, and the costs of loaders kept increasing: the cost of labor to run them increased, maintaining them got more expensive, and insurance companies figured out how many of them burn and take down the facility with them.

The trouble now is that many people still have a natural tendency toward loaders. To help customers overcome these tendencies, we stress the costs associated with these machines:

- The capital cost of the loader
- Maintenance
- Fuel
- Labor
- Insurance
- The damage they do to everything around them (this one is often missed, but real, cost)

A customer of ours studied these costs and concluded that their loaders each cost them more than \$400,000 per year total. That will buy a few world-class conveyors and bins.

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Q: How could receiving biomass be done quicker? I would think that whomever would have the quickest unload time would have a tremendous advantage. Time is money.

A: You are correct. Time is money. However, in many cases, it is not the facility owners' time or money. It's the truckers'. And as long as the grumbling from the truckers is manageable, nothing will change. Change occurs when there is competition for fiber and the other mill has faster turnaround. This is a universal story—without competition, things do not improve. They still run the worst tractors in the world in Russia because there has never been any competition.

How to receive biomass faster depends on the facility, of course, but we have provided tools for when they receive by walking floor trailer. We have a receiving bin that absolutely will keep up or outrun the trailer output, and we have big conveyors that can keep up with the bin. So now there is no reason for the trailer to dump on the ground and then have to handle it again. Our system takes the material from the trailer, through a screen, and into the storage bins.

For the truck dumpers, we also have a pit solution. The trucks drive over the pit and onto the truck dump. The bridge they just drove over opens up, a backstop comes out of the ground, and they back up against it. The dumper elevates and dumps the entire contents into a pit large enough to take all of it. The SMART Floor in the pit feeds large conveyors that take the material away fast enough that by the time the next truck is in position we have made room in the pit.

Q: It would appear that your enclosed drag conveyors would lead to lower fugitive dust. I know fugitive dust was a concern from our safety person. Is this a concern in other mills as well?

A: Yes, and it is a strong selling point for our SMART Conveyors™ that gets stronger each day. The safety factor often wins contracts for us, especially when a company has just experienced a major workers comp claim. Too often, though, companies forget their safety problems quickly after such an occurrence—until it happens again.

Q: I noticed that ease of maintenance and reliability is a common theme in the Biomass Engineering & Equipment literature. Do you offer a remote/electronic monitoring of the system, similar to some of the more upscale dry kilns?

A: We are currently working on such a monitoring system. We have purchased an AI camera that shows great promise. The first thing we have to do is get good monitoring and know what is actually going on. Then we can decide what to do about it.

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Q: Are there any benefits to converting green biomass to pellets and then feeding those to a wood boiler as opposed to just burning green biomass? Would those pellets reduce stack emissions and become more efficient, or does the additional cost and energy consumption outweigh the potential benefits?

A: This is an age-old discussion. Why put all that energy into making pellets when you could just burn or dry the chips? Much of the answer comes down to handling and logistics. Condensing wood into a dry pellet allows you to literally move it across the globe. The transport cost per BTU in chip form is not as attractive. A biomass power plant must source their raw wood supply generally in a pretty small radius to control costs. Green biomass is heavy, and you are transporting water with negative value (it costs money to remove the water no matter how you do it). Another factor is that it is easier to retrofit and convert a coal plant to accept pellets. Pellets also provide a more consistent burn. Some of the VOC's have been removed in the pelleting process, as well, so the power plant scrubber's capacity is increased.