MIDNIGHT TRAIN TO GEORGIA
AIN’T GOT YOUR DDGS

FOUR OPTIONS TO INCREASE DDGS STORAGE AT FACILITIES THAT RELY ON RAIL SHIPMENTS
CONTENTS

Introduction .......................................................................................................... 1

Rail Car Problem .................................................................................................. 2

Options to Store More DDGS Using Current Infrastructure ............................ 4
  Option 1: Add Outlets ...................................................................................... 5
  Option 2: Install a 2-Way Flow Diverter ....................................................... 6
  Option 3: Install a Parallel Conveyor ............................................................... 7

Increase True Capacity With Container Bins .................................................... 8

Container Bins With Moving Floors .................................................................... 9

Advantages of Container Bins ............................................................................ 11

Caveats and Limitations ................................................................................... 15

Conclusion ......................................................................................................... 16
Introduction

Long gone are the days when DDGS were a byproduct nobody knew what to do with. DDGS are now a money-making material. So, it’s a problem when facilities run short on space to store them, especially when profit margins are tight.

When storage space for DDGS runs short, facilities must either cut back on ethanol production or forgo producing DDGS and instead sell wet cake—which is problematic if there’s not feedlot or other ready market nearby.

With process changes that increase the amount of DDGS ethanol plants yield year by year, capacity issues become an issue. What do ethanol producers do with their DDGS when:

• Empty rail cars aren’t available?
• Railroad companies can’t pick up their loaded rail cars?
Rail Car Issue

The rail car issue will likely only get worse in the near future. Richard Kloster, Senior Vice President and Chief Commercial Officer of Alltranstek, reported in his 2019 Outlook article that rail traffic increased nearly 3 percent in 2018 while the total number of rail cars surplus decreased a whopping 29 percent.

He quotes FTR Intel’s projection that demand for rail traffic will increase more in 2019 and the total fleet size will remain about the same.

Traffic from ethanol facilities, specifically, will go up, too. POET has in the works a new 80MMgy facility in Shelbyville, Indiana. And a plant operating under the name Red River Biorefinery broke ground in August 2018 in North Dakota.
Rail Car Issue (Cont.)

With a lack of available rail cars and higher production rates of DDGS, ethanol facilities must consider how they can either make better use of the storage space they have or how they can efficiently increase storage.

The ramifications for not doing so are unpleasant:

• Decreased overall production.
• Unhappy customers who won’t get the DDGS they ordered.
• Wasted product.
Ethanol manufacturers typically store DDGS in piles about 25 feet apart on the concrete floor of a large, steel-framed building.

To keep these piles from growing too high and to better utilize the space available, producers shuffle around the DDGS with a wheel loader and operator. These wheel loaders, of course, cannot pile DDGS as high as it forms under the conveyor chutes.

Options for increasing the amount of DDGS a facility can store begin in this space by better using the storage volume.
Option 1: Add Outlets to Current Conveyor

For this option, an ethanol producer could install gated outlets between the existing outlets on their DDGS conveyor. This will increase the number of DDGS piles. The piles will intersect and produce more of a ridge.

The benefit of this concept is limited, however. It may not “add” even a day’s worth of storage volume. Without calculations, we can’t know the specific amount of additional storage this (or other options suggested here) will add.

And, of course, the piles are not “adding” storage volume, just better using the space available.
Option 2: Install a 2-Way Flow Diverter and Add Perpendicular Conveyors

On each outlet, install a 2-way flow diverter, with one side of the diverter dropping DDGS on the floor and the other side going to a new drag conveyor. This conveyor will point toward the closest side wall and have one or more discharge points.

The new piles that form should allow producers to store more DDGS. Producers may still have to rely on wheel loaders to shuffle around DDGS, however. The roof structure of their storage building would also have to be able to support the additional load.

Producers would also need to be aware of filling their storage facilities in such a way that wheel loaders could rotate the stock.
Option 3: Install a Parallel Conveyor

Assuming the existing DDGS drag conveyor will be replaced in the near future, producers could opt to install a new drag conveyor.

A Biomass Engineering & Equipment conveyor could be installed without shutting down the operation. The conveyor would either be built on the roof or pass through the DDGS building without internal support columns, running parallel to the existing drag. Depending on how long the building is, the drag could be mounted on outdoor steel support towers at each end of the building.

There would be outlets every 5 or 10 feet to make a long ridge of DDGS. DDGS would be piled up on the long wall to a height of 4 to 6 feet to gain storage volume.

This may reduce or eliminate the number of trips the operator has to make per shift if it makes enough piles or ridges of DDGS.
Better utilizing the existing storage building may alleviate the pressure ethanol producers feel when it comes to storing DDGS, but it may not totally solve the problem.

They may get a few days’ extra storage by storing DDGS in additional piles in their building. But if the rail cars or trains are a week late or more, they may still be out of luck.

Besides expanding the storage building or constructing a silo, producers could increase storage their true storage capacity by installing modular container bins fitted with push-pull floors.
Container Bins with Moving Floors

BE&E’s container bins would allow producers to store material outside, near the DDGS building, which would eliminate the hazards of working in an agricultural explosive dust environment and would allow the new equipment to operate without explosive Class II 2 G rated components, thereby lowering the cost.

Also, because the bins would store DDGS in a fairly vertical, compact area (the container bins can be stacked three high), they could be installed in most ethanol facilities close to the current DDGS storage building on a small parcel of unused land.

The containers would require their own drag conveyor to feed them, but they would not require wheel loaders for output. The push-pull floor would automate the output into another drag that heads to the rail car loading station.
Producers could alternatively opt to place container bins inside their DDGS building.

Container bins could be used to add capacity within the storage building, as they would store DDGS vertically rather than in piles with low angles of repose.

If placed directly by the loadout pit, the container bins could also minimize wheel loader travel as it fills the loadout pit, as the containers would themselves help fill the pit.

Output from the container bins could furthermore be directed directly to loadout, bypassing the pit altogether.

Another advantage to adding container bins inside the DDGS storage building is that manufacturers could divide their storage within the building.
Advantages of Container Bins

Opting to increase DDGS storage with container bins has a number of advantages.

First, it’s a more efficient use of storage space. While only a small percentage of the total area of a storage building actually holds DDGS, nearly all a container’s volume holds DDGS.

Other advantages include:

- Elimination of wheel loader (and related costs—see caveats).
- No tire rubber mixing with DDGS.
- Ability to automate discharge.
- Allows positive rotation of DDGS stock (first in, first out).
Advantages of Container Bins (Cont.)

- Reduction in rodent and bird issues.
- Can maintain with conventional tools (if DDGS piles eliminated or bins placed outside).
- Lower operating costs (automated discharge; new, efficient conveyors vs. aging system).
- Store DDGS without large agricultural dust hazard environment.

It’s possible by storing all DDGS in bins and eliminating the agricultural explosion environment of the DDGS storage building that a company could reduce the cost of its insurance (less risk of an explosion).
Advantages of Container Bins (Cont.)

Another advantage to container bins is that they would allow ethanol producers to divide their products without having to build more silos.

As producers develop new lines of DDGS, they require additional facilities to store them. If appropriate for the material, BE&E’s container bins would be much more economical than a silo or storage building.

Alternatively, producers could store their traditional DDGS in our bins, which would open up the storage building for other uses, such as storing corn or a specialty line of DDGS there.
Advantages of Container Bins (Cont.)

Compared to silos and buildings, our container bins offer lower installation cost due to smaller foundation and preassembly (this is true for both bins and conveyors).

Our containers also don’t need the expensive type of concrete foundations that silos need. And the container bins install quickly, which lowers the construction costs.

Plus, because our container bins depreciate as equipment, not buildings, the shorter depreciation period allows for a larger annual depreciation cost, which increases profit.
Caveats and Limitations

It’s worth noting a few caveats. The first has to do with DDGS temperature.

At ethanol facilities where DDGS aren’t sufficiently cooled prior to reaching storage, it is not advisable to store the DDGS in container bins. The bins would not allow DDGS to radiate heat well. Ethanol facilities, in this case, would need to continue relying on wheel loaders to move around the DDGS to allow it to cool.

A second caveat involves automated discharge. To completely get rid of wheel loaders, producers would need to install enough container bins to store all their DDGS as well as systems required to move the DDGS from the containers to the loadout.
What is your plan for when you run short on storage space? If you need more of it, consider our solutions.

They aren’t necessarily conventional, but better solutions require that conventions be tossed aside. Our equipment will make your processes smoother and your company more profitable.

So, talk to us. Call or email to start a conversation about how our SMART Conveyors and SMART Containers can benefit your business.

www.BEandE.net
OR
317-522-0864