Perdue Barge’s new unloading facility

**Introduction**

Perdue Farms wanted to upgrade its original grain unloading facility, which included a mechanical (belt type) unloader with a peak capacity of 600 tonnes per hour and a dual line pneumatic unloader with a capacity of approximately 100 tonnes per hour per line.

While the mechanical unloader offered a good peak unloading rate, the average rate was low due to additional time required for the barge clean out. Because of their age, both unloaders were also requiring additional maintenance and extensive repair costs.

It was hoped that the new unloaders and expanded facilities could aid the management of the terminal operator’s grain operations.

**The facility**

The facility’s pier is situated so as to allow barges to be positioned for unloading on both sides, but the existing equipment could only unload from one side. There is also a possibility to bring in vessels of up to 30,000 dwt, but, again, the existing equipment was unsuitable for ships of this size. A system that can solve these problems would have to be installed if the operations were to improve at all.

**The solution**

Perdue Farms installed a 500 mtph pneumatic unloader designed and manufactured by Neuero. This unloader features a 30 meter boom with a triple telescopic horizontal suction pipe.

The 30 meter boom gave enough reach to service a standard river barge, without having to move the barge. It can also unload two holds of a ocean going vessel without having to slip the vessel.

Additionally, the unloader was designed to give a slewing movement of more than 300 degrees, which allows barges to be unloaded from the opposite side of the finger pier.

The facility is now completed and the Neuero unloader has reached capacities in excess of 14% – more than contractually agreed.

Most importantly the following improvements were made to the facility:

- Cleaner unloading environment – no dust pollution.
- Barge movement during unloading not required.
- Barges can be unloaded on both sides of the finger pier.
- Ocean going vessel could also be unloaded – this could not done before.
Technical description

Blowers
The blowers used in the equipment are equipped with an automatic belt tension (ABT) system that maintains a continuous belt tension. This system reduces the maintenance cost and avoids belt over tension, which in turn increases the bearing life.

They also have an air flow regulator that allows a conveying speed to be set, which is adequate for the product to be unloaded and also limits the power at idle work.

The operator can choose to switch off blowers to operate at approximately 50% capacity, reducing electricity usage. In addition to this, the air volume will remain the same and the system will have approximately 50% negative pressure.

By utilising the filter receiver with reverse air flow, the unloader is capable of fully cleaning the filter bags. The filter cleaning air is provided by Neuero turbo blowers, which continuously flush the filter bags. This type of cleaning system eliminates the high maintenance associated with a high pressure pulse type of cleaning system. It also eliminates the problems associated with accumulated moisture, which is always present in a high pressure system and requires special moisture separators and filters to keep the filter bags from getting wet. This is especially important in coastal areas with a higher amount of humidity. With this filter design, the use of compressed air is avoided, as is the necessary air dryer and solenoid valves. By removing these, there is less chance of high disturbance and maintenance.

Swiveling ability
The unloader has been specifically designed with extra swiveling capacity to be able to unload barges on either side of the finger pier. This enables barges to be docked on one side of
the pier, while the other side is being used for unloading. This greatly decreases the down time and consequently increases terminal productivity.

**Booms**
Along with the triple horizontal telescopic pipe, the 30 meter boom enables the unloader to essentially empty the complete barge without shifting. This is not normally possible and contributes to the decrease in terminal downtime. This unloader also has the standard Neuero capability of lowering its boom to the ground for inspection and the general maintenance of the flexible joint as well as the wear back elbow. In this case the wear has been anticipated with the use of ceramic tiles to reduce the maintenance expenses to a minimum. The boom is also lowered to the ground when high winds and hurricane conditions exist.

**Increased size capabilities**
In order to help expand the services offered by the terminal, the unloader has been designed and dimensioned to be able to also discharge ocean going vessels up to Panamax size.

**Additional clean up features**
To facilitate a more efficient final clean up of the barge or ship’s hold, the machinery has the capability to lift a 6 tonne bobcat or pay loader from the pier and deposit it in the barge or ship’s hold without having to use other pieces of equipment.

The unloader is also equipped with a Scada computer system, which is capable of recording all of its operations, to be monitored by the administrator if so desired.

**Conclusion**
The new unloader has helped ensure the terminal operator can effectively expand their operations, without losing productivity or efficiency. By combining a swiveling boom and effective energy saving techniques, it is also hoped that the grain unloader will lead to an expanded terminal with fewer maintenance costs and larger berthing ships.

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**ABOUT THE AUTHOR**

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**ENQUIRIES**

NEUERO Industrietechnik
für Förderanlagen GmbH
PO.Box 188
49303 Melle
Germany

Tel: +49 (0) 5422 95 03 0
Fax: +49 (0) 5422 95 03 50
E-mail: neuero@neuero.de