

## Why opt for a pneumatic system? Neuero has the answers



*Neuero has supplied two 600tph ship unloaders to Russia's biggest oil extraction plant.*

Neuero Industrietechnik asks why it is that a system that is safe, generates the lowest noise and dust emissions, completes the job including clean-up, is highly efficient and requires lower investment is not always the first choice.

The answer is simple, says Neuero. Many manufacturers do not invest in research and development, or have simply gone in the wrong direction, resulting in the loss of technical expertise. When big companies in the flour milling market do this, they argue that a pneumatic system is not the best choice. This can result in uncertainty from clients, even those that have used pneumatic systems for years.

Also, some manufactures make recommendations that are based on their product offering, rather than on the best interests of the clients.

Therefore, users' decisions are made all the harder, and this can result in restrictions in the use of a system, based on erroneous assumptions. Neuero says that this situation can be rectified, by illustrating some real-life examples that illustrate technical innovations.

Neuero has invested in not only a new testing and research

laboratory, but more importantly in technology. The result is a new turbo blower with direct drive. The result of the development can be seen in a reduction in energy requirements, reduction while maintaining high capacity.

The energy requirement has been the only weak point in the pneumatic unloader compared with a mechanic unloader. The power requirement gap has been reduced with the new Neuero blower direct drive compared with older pneumatic technologies. This also gives the opportunity for Neuero to be active in refurbishing less efficient existing installations.

In addition to the energy reduction, reliability has also increased. The direct drive is now equipped with temperature and vibration sensors to monitor bearing conditions and provides a warning to prevent a bearing failure or notify maintenance to change it. The use of fewer parts also reduces the need for maintenance.

### PROJECTS

In addition to new installations in Russia, Egypt, Romania, Saudi Arabia incorporating the new Neuero blower direct drives,



*Original blower.*



*Replacement blower.*



Original nozzle.



Replacement nozzle.

Neuero is also giving a second life to older installations. The first is now in Damietta, Egypt where a 30-year-old shipunloader (not made by Neuero) reached its original capacity with the new blowers and conveying adjustments, while cutting power consumption in half.

**Russia:** two ship unloaders of 600tph (tonnes per hour) each for the biggest oil extraction plant in Russia. This is part of a third expansion at the site. Neuero has delivered two shiploaders for this project as well.

**Damietta:** this is interesting because here you can see the evolution in pneumatic shipunloading based on real comparison. The upgrade of the blower (see pictures on pxx) is like carrying out a heart transplant, because many unknown factors need to be considered. Neuero has done several similar jobs with various manufacturers' unloaders around the world, like in Iran, Philippines, Saudi Arabia and Oman.

**THE TASK**

The modernization of a competitor's shipunloader built in 1985. There are two identical units installed in Damietta. Each dual line unloader was sold to have a nominal original capacity of 2 x 350tph. However, it has not been confirmed whether they ever reached this capacity in the past. The new goal was to get 300tph per line.

The main problem in any modernization project is to know in advance all the necessary parts that need to be replaced. This is normally not possible because of hidden problems that can only be detected after the replacement of key components. The bottleneck passes to the second phase.

In the Damietta project, in order to maintain the lowest investment cost, we installed only a new Neuero blower with direct drive on one line and tested using the original conveying piping. The second phase was to replace the old boom and piping and nozzle (see pictures above) as well as installing a new belt airlock. The results are shown in the table, right.

The results show what is possible with relatively low investment in existing installations to get back to original capacity with lower energy requirements. Here, Neuero developed the conveying pipes in Hardox 450 for a longer life and also supplied Neuero winches for the necessary movements.

The capacity of 350tph was reached for short periods of time.



Existing airlock.

Original blower.

For example, a new ship unloader designed today to reach the capacity of 350tph, a 330kW motor is installed and less than 300kW consumed. This gives a power consumption of 0.80kW/ton.

**WHY IN THE PAST WAS MORE ENERGY NEEDED?**

There are many possible answers to this question. First, the use of rotary piston blowers requires more energy. Second, most manufacturers do not design the unloader around the customer's requirements. They use their existing designs and parts and try to adapt instead of engineering a product for the application. The result is to supply what they want and not generally what is the best for the customer or the application considering energy optimization and maximum unloading capacity.

**DAMIETTA PROJECT RESULTS**

Pos.	Description	OLD*	New 1**	New 2***
01	Power kW	630	315	315
02	Capacity t/h	2 x 125 = 250	200	300
03	kW / ton	2.9	1.6	1.05

\*OLD existing first unloader with two boom without improvements

\*\* Modified second unloader first boom with only new turbo blower

\*\*\* Modified second unloader second boom with new turbo blower and new suction nozzle