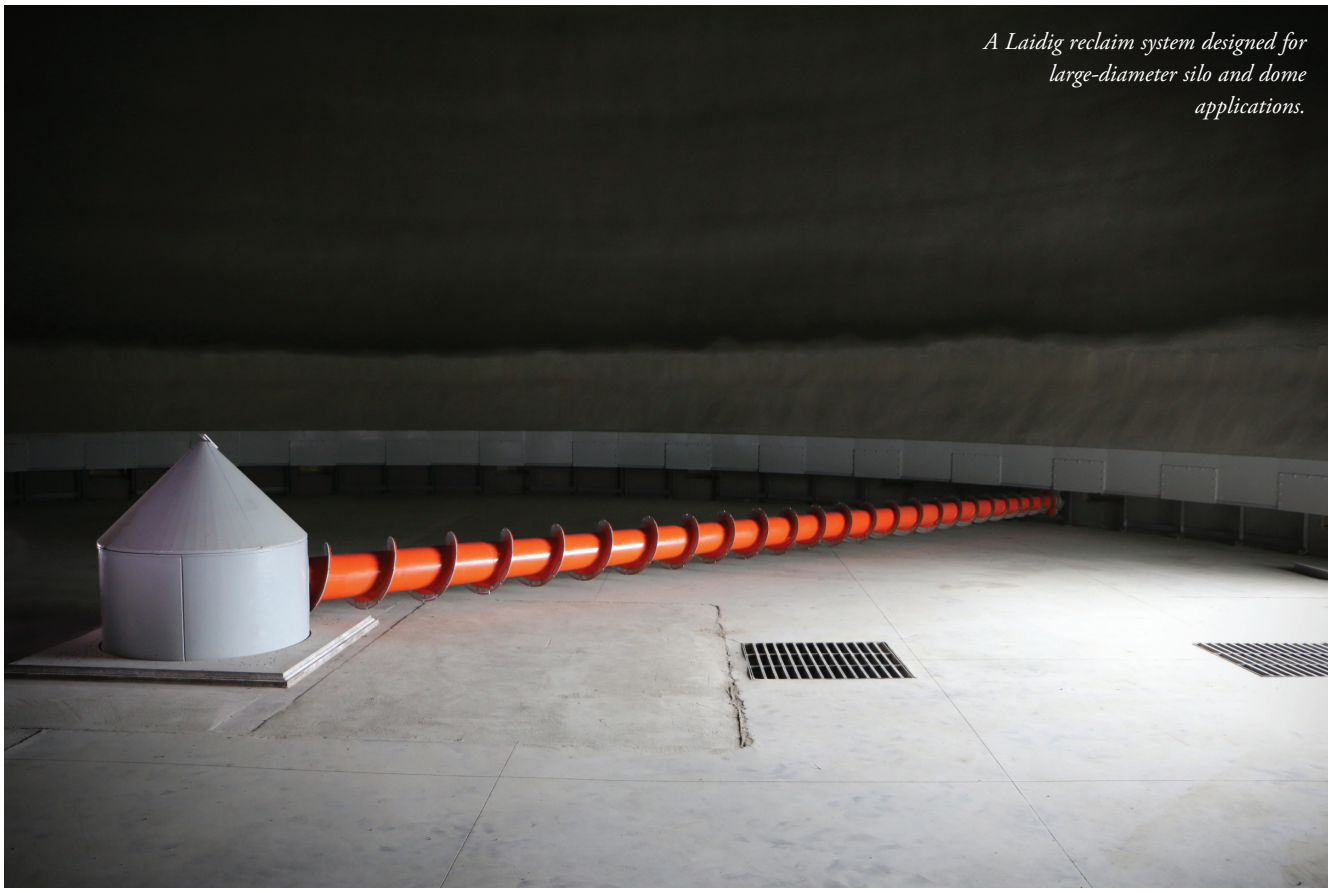
Large-diameter bulk storage projects keeping reclaimer manufacturer busy



A Laidig reclaim system designed for large-diameter silo and dome applications.

The year 2023 was a big one for big storage, *writes Mandi Steffey, Sales Marketing Manager at Laidig Systems, Inc.* As the world's political climate impacted food security and supply chain stability, grain processing companies around the globe started seriously investing in not just facility upgrades, but greenfield projects, as well. The uptick in activity has kept Laidig Systems, Inc., a bulk material storage and automated reclaimer designer and manufacturer based in the United States, busy helping customers find the right equipment to continue operating efficiently.

Growing storage diameters are a main

Exterior view of port facility silos using Laidig reclaim systems for unloading.

facet of this uptick in activity. Some port facilities known globally for grain and meal exports have and continue to erect large silos and domes — some a staggering 60 metres in diameter — to keep up with worldwide demand.

As long-term human and animal food storage becomes even more prevalent in the future, the technology used to handle and unload those materials will become just as important. The main reason for this is simple: the precious material inside silos and domes must be effectively and safely reclaimed and unloaded.

When storage volumes increase, material flow issues inside silos appear more frequently, highlighting the need for reliable unloading equipment. Grains, and especially meals processed from grains, do not flow well from large structures. When stored in large tanks, materials like soybean meal and DDGS tend to cake up and become hardpacked, making the unloading process challenging.

When facilities are forced to shut down their process to deal with silo bridging, channel flow, or other storage problems, their efficiencies take a huge hit. The time lost dealing with bridged or blocked grain can cost companies significant amounts of money, and many businesses literally don't have time for downtime.

A reclaim system is one way to guard against a stop or slowdown in production. While there are a handful of different reclamation methods commonly used in the industry, an automated, screw-type mechanical silo/dome bottom reclaimer has proven extremely effective in unloading grains and meals.

Laidig specializes in this kind of aggressive reclamation technology. In a typical large-diameter application, the screw auger is designed to start and operate under a full load of material. The screw rotates about its own axis, pulling material toward the centre of the silo floor to be discharged. At the same time this is happening, the screw slowly advances around the silo, sweeping the entire floor in a clockwise or counterclockwise motion. As the material is augured to the middle of the floor, it flows down through a centre chute and into a discharge auger, conveyor, or other delivery method for truck, train, or ship loadout.

These machines are paired with automated, push-button operation technology and can be paired with a wide range of system controls configurations. The systems as a whole are designed for not just ease-of-use, but safety, as well. Since the unloading is completely handled through mechanical means, facilities do not have to use manual labour to start or finish the silo unloading process. To ensure the operator's safety in terms of servicing the machine, all maintenance points are located outside the silo.

While the effectiveness of any bulk storage plan relies upon a number of factors, the key to success for large-diameter storage is in the planning stages. It is essential that the reclaim system is designed for the exact silo in which it will be installed, because the large and asymmetric material loads commonly seen at port facilities are known to create not only the previously mentioned flow issues, but structural integrity issues, too.

The technology and design in Laidig reclaim systems have been historically relied upon to solve issues many port facilities regularly encounter:

- First-in, first-out (FIFO) inventory control.
- Material bridging or other flow issues.
- Product infestation and contamination.
- Operator safety challenges.

Laidig has installed and commissioned thousands of systems, including at large, notable terminal facilities in North America, South America, Asia, and Europe. Many of these systems have been in successful operation for decades.

Laidig Systems installing reclaim system at large port facility in Brazil.