

# CST

# STORAGE

ENGINEERED AGRICULTURAL STORAGE PRODUCTS





**CST**  
**STORAGE**



---

Engineered Storage Products

---



Harvestore® is the champion of feed quality. Research proves that Harvestore systems reliably provide storage for the highest quality haylage, high-moisture grains, limited dry matter loss, labor-saving convenience and better lifetime value versus today's common storage bags and bunkers.



The new Harvestore XL™ Unloader series is the latest innovation from CST Storage – designed to meet the demands of today's modern feeding systems. Harvestore owners asked for a faster unloading system. The answer is a technologically advanced unloader that is simply more powerful, faster and efficient than any Harvestore unloader before it.



Designed for the proper handling, storage and utilization of livestock manure, a waste management system starts with a SlurryStore. Producers can collect, scrape and/or wash wastes into an above-ground SlurryStore, helping protect the environment and better utilizing wastes as a fertilizer.



CST responded to the need of economically and safely storing liquid fertilizer by developing NutriStore storage systems. CST developed a tank design that can withstand the aggressive nature of liquid fertilizers and still provide the tank longevity expected from all CST products.



# FEED STORAGE STRUCTURES

## Harvestore. For a Lifetime of Value.

Harvestore has built its reputation on providing dairy farms and other livestock operations with superior feed storage structures. For years, producers using Harvestore's oxygen-limiting technology have seen the freshness of the haylage and high moisture corn coming from the unloader, the limited spoilage and dry matter loss, and the high palatability that usually results in greater efficiency.

Many farmers who own both Harvestores and bags or bunkers choose to store their best forage and feed their top producers from Harvestore units. That's because forage quality influences milk production, reproduction efficiency and profits. Harvestores have been proven to be the best storage system to preserve forage quality.

## A Harvestore System Still Provides Cutting-Edge Technology

### Breather Bags

- Standard, unique feature in all Harvestore Systems
- Act as bladder for gas expanding and contracting within the structure
- Helps to minimize air that comes in contact with feed

### Multi-Purpose Design

- Forage or High Moisture Grain
- Expandable and movable
- Unloader flexibility
- Available up to 106 feet high
- New larger models available

### Push-Button Fill Doors

- Opens and closes fill doors with the push of a button
- Eliminates the strenuous job of climbing the structure

### Glass-Fused-to-Steel Construction

- Molten glass fused to both sides of the steel sheets
- Hard, durable and long lasting
- Sheets designed to meet varying loading requirements from top to bottom
- Vitrium™ interior coating formulated to resist acids from fermented feeds
- Edges thermally coated with Edgecoat,® a protective stainless alloy
- Smooth sidewalls allow feed to slide down easily



# HARVESTORE BRANDED PARTS & KITS

## Harvestore Branded Parts

Harvestore Branded™ service parts are engineered and manufactured to strict tolerances so they perform under extreme conditions.

Harvestore Branded Parts include:

- Talon Chains
- Chisel Tip hooks
- Unloader cutter arms
- Unloader backbones and housings
- Gears, shafts and pinions
- Sprockets
- Breather bags
- Complete unloader remanufacturing kits



## Rebuild Kits

Each pre-owned structure erected by an authorized dealer will be constructed with rebuild kits using Harvestore Branded parts. The combination of genuine Harvestore Branded parts and authorized Harvestore dealer service will ensure quality, satisfactory operation and longevity.

### Research shows Benefits over Bags and Bunkers

A recently completed study confirmed that haylage stored in a Harvestore experiences less dry matter loss than haylage stored in bags and bunkers.

	Bunker silo	Bags	Harvestore
Dry Matter Loss (%)	16.9	11.3	4.3

Source: US Dairy Forage Research Center, 2005-2006

The study also showed that cows fed haylage from a Harvestore produced more Fat-Corrected Milk (FCM) than those fed from a bag or bunker. The milk components chart shows the differences between storage options.

Furthermore, Kansas State University reports the dramatic differences in dry matter loss between a Harvestore, bag or bunker.

	Harvestore	Bags	Bunkers
Dry Matter Loss %	3 – 8 %	12+ %	12 – 25 %

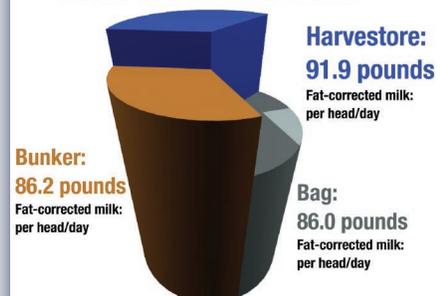
K. Bolsen, Kansas State University

### Alfalfa haylage stored in:



2005-2006 U.S. Dairy Forage Research Center

### Cows fed alfalfa from:



U.S. Dairy Forage Research Center

**HARVESTORE™**

**XL**  
UNLOADER

## EXPECT EXTRA LARGE PERFORMANCE

The Harvestore XL™ was designed to meet the demands of today's modern feeding systems. Harvestore owners asked for a faster unloading system that compared to or beat the unloading speed of bags and bunkers. The answer is a technologically advanced unloader that is simply more powerful, faster and efficient than any Harvestore unloader before it.

The Harvestore XL 400 Unloader is capable of moving up to 400 pounds per minute of 55 percent moisture haylage\*. At that speed, farmers have a viable option to unload haylage as fast or faster than they can from a plastic silo bag or a concrete bunker.

Six main operational factors make the Harvestore XL Unloader series technologically improved and provide the foundation for lower maintenance and bigger, better and faster performance. They include:

- Direct variable speed drive system
- Power capacity more than double of previous Goliath® and Alliance® unloaders
- Series 400 -- 30 HP and Series 200 – 25 HP use three phase motors. Both can connect with 1-ph or 3-ph power sources using a new advanced phase inverter control system
- Six unloader speeds that can be switched during operation
- Direct arm drive system with load sensor
- The new XL Unloader 400 and 200 chain designs have almost double the previous chain strength



**5b**



# FASTER THAN A SPEEDING PAYLOADER

## 1 Direct Variable Speed Drive System

The Harvestore XL Unloaders feature significantly more chain and arm force capacity than any model before it. The direct variable speed drive system is fully enclosed and requires no V-belts or pulleys. Consider these improvements:

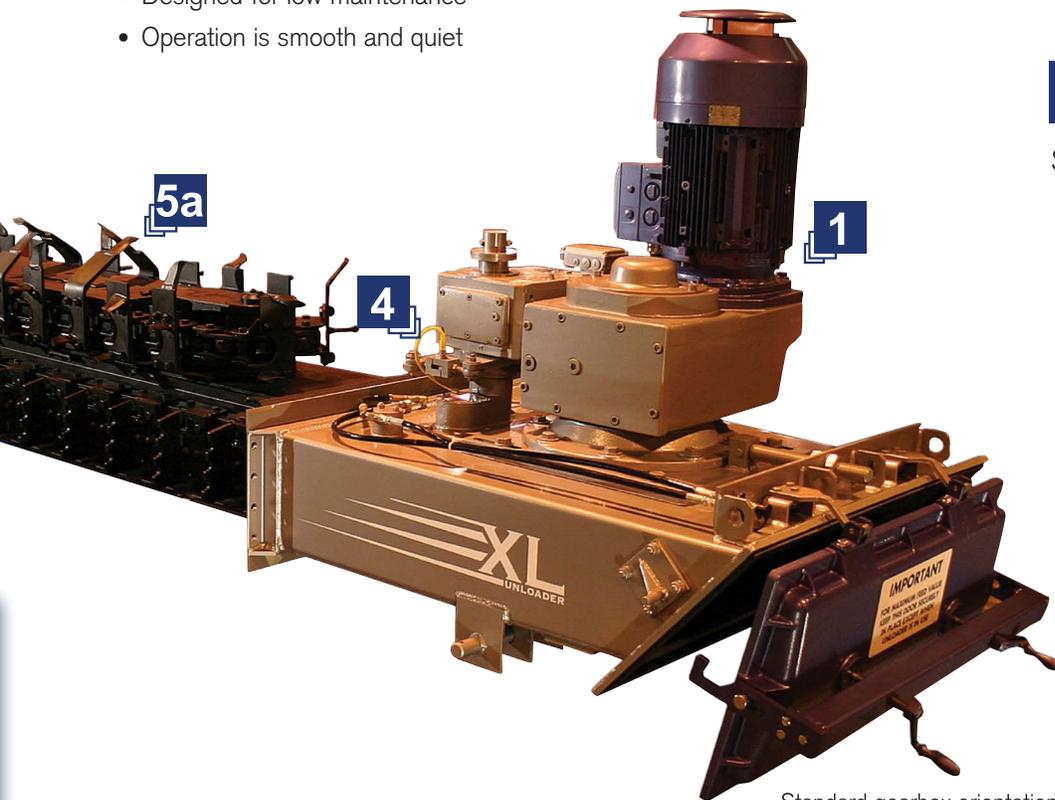
- Motor and gearbox are 2.5 times more powerful than previous unloader models
- Designed for a slow accelerated soft start and stop with no sudden impact loads on critical unloader components
- Designed for low maintenance
- Operation is smooth and quiet

## 2 Power Capacity & Control

The new technology built into the control box of the Harvestore XL 400 Unloader control powers a 30 horsepower 3-phase motor. The Harvestore XL 200 Unloader control box powers a 25 horsepower 3-phase motor. Both can connect to either a **1-phase or 3-phase power source**. This makes the Harvestore XL Unloader series more than twice as powerful than previously possible.

## 3 Six Unloader Speeds

Speeds can be changed while the unloader is running. The Harvestore XL Unloaders use a variable frequency drive with programmed chain acceleration and deceleration. Again, with no quick start, there is no shock or sudden impact on unloader components.



Standard gearbox orientation is in vertical setting.

## 4 Direct Arm Drive System with Load Sensor

The new direct arm drive system on the Harvestore XL Unloader series is a major improvement over other unloaders providing fast and uniform delivery. A new Load Sensing System monitors and reacts to cutter arm loads.

- The XL Unloader control system reads the information and signals the control to advance the arm under light loads or hold the arm under heavy feed loads
- The Arm Drive System allows for precise load control during its operation
- Operation is simple, the arm advance control automatically turns the cutter arm drive motor ON and OFF



## 5a 5b New Chain Design & Improved Strength

Perhaps the most significant advancement is the improved chain strength. The conveyor and cutter chains on the Harvestore XL 400 are tested for up to 82,000 pounds of load bearing weight, and the Harvestore XL 200 tests up to 49,500 pounds.



# ENGINEERED AGRICULTURAL NUTRIENT MANAGEMENT SYSTEM

## Consistent Nutrient Value - Agitation Makes the Difference

The ability to agitate its full contents makes a Slurrystore System much different than lagoons or concrete pits. Neither of these storage options is better at achieving consistent nutrient balance than Slurrystore. Using its center agitation system, a Slurrystore evenly blends manure nutrients to maximize overall value for crop production needs. That translates into less purchased fertilizer and utilization of "waste" to generate a positive return.

## Environmentally Sound

A Slurrystore is an above-ground positive containment structure engineered to the highest standards. With greater environmental concern and stricter governmental regulations on the horizon, Slurrystore is clearly the best choice for environmentally sound manure management.

- A Slurrystore is designed and constructed using bolted glass-fused-to-steel panels for secure storage and high corrosion resistance.
- As above ground positive containment, a Slurrystore minimizes the danger of run-off, leaching and ground water contamination compared to earthen lagoons, concrete pits or other storage methods.
- Odor control also makes Slurrystore environmental friendly. Since a Slurrystore is above ground, a "chimney effect" is created, releasing any odors above ground level into higher air currents. When unagitated, it will often form a crust on the top layer sealing odors in while bottom filling reduces the amount of surface disturbance.



# ENVIRONMENTALLY SOUND

## Regulation Ready

Slurrystore Systems are ready for existing and new regulations.

- NRCS approved
- EQIP qualified
- Designed for North American climate range
- Can be engineered for specific locations
- Solution for seasonal manure application restrictions

## System Flexibility

Slurrystore is designed to meet individual owner needs.

- Expandability
- Cover Options
- Smaller Footprint
- Relocation
- Digester Applications



## Agitation and Nutrient Balance

Nutrient consistency is important in determining overall nutrient value when land-applied for crop production. Used as a commercial fertilizer replacement or supplement, a consistent mix of manure nutrients eliminates guesswork and over- or under-application. The ultimate benefit is fertilizer savings and increased productivity.



## Pump Options

Slurrystore Systems offer pump options that are designed and engineered to meet the agitation needs of each structure from 2,000 to 4,000 GPM (gal./min.).

## Site Preparation and Construction

Authorized Slurrystore Dealers provide turnkey solutions from specification of the right Slurrystore System to fulfill your needs to its final construction and service. Slurrystore construction is done in strict accordance with the procedures and policies of CST Storage. All dealer construction crews are factory-trained to utilize the jack-build process and ensure the highest quality finished product.

## Research Proven

A 2011 study by Purdue University examined the solids and nutrient retention in a Slurrystore and evaluated the ability of its agitation system to mix the manure prior to removal. The study concluded that "The tank agitation system adequately mixed the manure in the tank during the cleanout process, resulting in little variation in manure nutrient concentrations during two separate cleanout periods."\*

\*T.D. Nennich, et al, Purdue University, 2011

# **NUTRISTORE™** RELIABLE LIQUID **Liquid Fertilizer Storage** FERTILIZER STORAGE

---

## Reliable Liquid Fertilizer Storage

Superior, low maintenance life cycle – no sandblasting or painting!

## The Economical Advantage

It's hard to predict fluctuating spring fertilizer prices and waiting to buy can be risky. But buying early and using a Nutristore liquid fertilizer storage system can allow you to take advantage of fall savings and offset potential price increases in the spring.

- Reduce the risk of volatile spring costs
- Increase savings when buying in the off-season
- Rely on proven liquid fertilizer storage through winter months
- Avoid spring road weight bans and crowding at fertilizer dealers' facilities

## Designed for Specific Customer Applications

Nutristore can be customized to fit nearly all types of liquid fertilizer storage needs with a variety of options and specifications. Its unique design makes Nutristore the efficient, reliable choice for liquid fertilizer storage.

- Quick, on-site construction
- Expansion and relocation capabilities
- 100,000 to 3 million gallon capacities
- Primary tanks and optional secondary containment walls

## Liquid fertilizer storage that is up to the test

Art Vanasselt of Sylvite Agri-Services in Putnam, Ontario understands the importance of reliable liquid fertilizer storage. In 1986, Sylvite erected two glass-fused-to-steel tanks that we today call Nutristores. The tanks contain 1,400 metric tons of liquid 28% nitrogen, which are filled by pumping from rail car or truck. Vanasselt, the Sylvite production manager, says the tanks have worked well over the years and leaking has never been an issue. "We emptied the tanks last year and completed an inspection. The interior walls are in excellent shape even after 25 years of use."

## A new kind of liquid fertilizer storage

The main advantage the Nutristore has over traditional liquid fertilizer storage tanks is durability, says owner Mike Rosenwinkle. "It's a long-life product with little to no maintenance," he says. In fact, he notes, "It's a pretty solid tank, I don't see it ever needing maintenance."



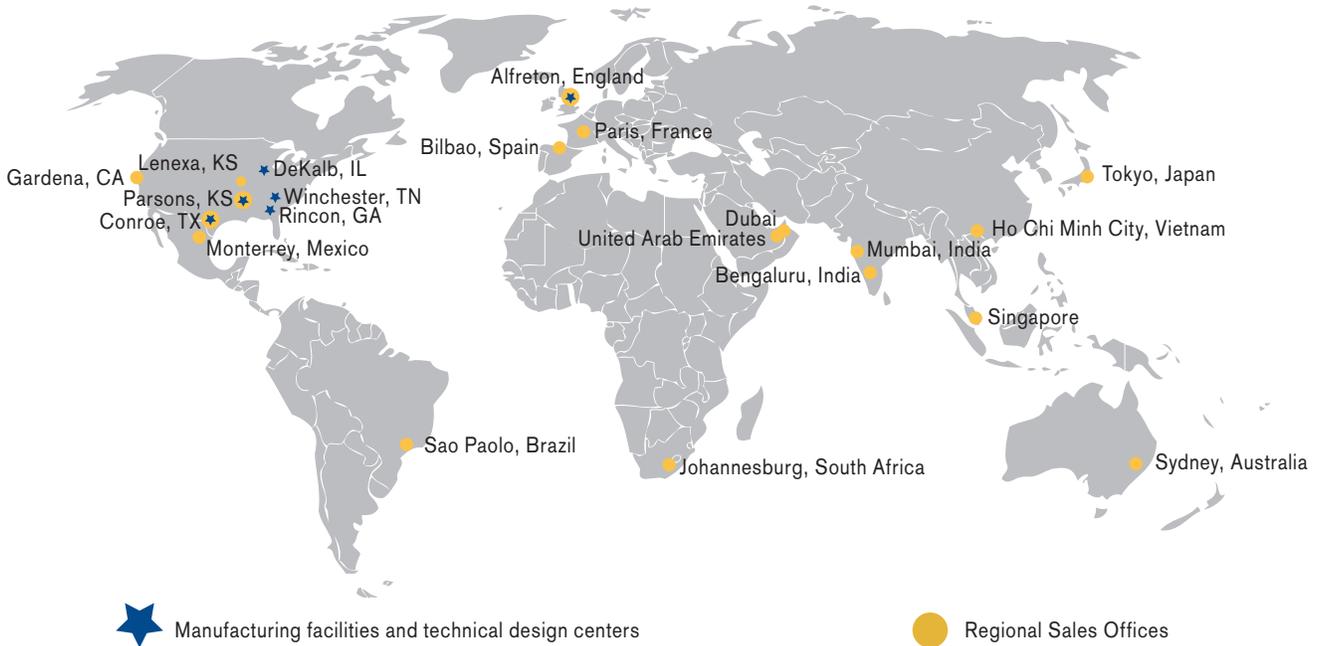


**CST**  
**STORAGE**

# WORLDWIDE AVAILABILITY

CST is committed to providing its customers with the highest engineered quality, best service, longest product life and greatest value for every storage solution we supply. Contact CST for all of your agricultural storage needs.

## CST Global Manufacturing and Offices



Go to [www.cstindustries.com](http://www.cstindustries.com) for more information on CST products and services.



345 Harvestore Drive  
Dakalb, IL 60115  
Phone: +1-815-756-1551 | Fax: +1-815-756-1475