CST STORAGE

COMPLETE STORAGE & COVER SOLUTIONS FOR ANAEROBIC DIGESTERS

BOLTED TANK TECHNOLOGY FOR ALL ANAEROBIC DIGESTER APPLICATIONS

CST Storage has been designing and manufacturing digester reactor tanks and covers for more than 30 years and has hundreds of satisfied customers around the world. CST Storage has a complete line of tanks, steel roofs, aluminum domes and flexible membrane covers for biogas plants.

Our world-wide resources provide personalized service to meet our customers' needs including design and engineering, construction, customer service and support. CST Storage and our Authorized Dealers work closely with customers to construct best-of-class, ultra-low-maintenance biogas plants structures that provide longevity and a rapid customer return on investment.

Bolted Tank Technology offered by CST Storage Solutions tanks have numerous advantages over competitive tanks.

- All tank parts are factory coated for maximum protection and are easily transported to the job site.
- Bolted tanks can be erected in 1/3 of the time required to build a field-welded or concrete tank on-site.
- Tanks can be assembled in even the most remote sites, without large staging areas, and in every season of the year.
- Bolted tank construction is very conservation friendly with little disturbance to the surrounding environment.
- CST Storage bolted tanks are factory coated, so there is no in-field painting required which can expose the environment to harmful silica from sand blasting or paint overspray.
- Tanks are assembled at ground level using a unique jacking system that progressively elevates the structure to install the panels without the need for expensive cranes or staged scaffolding.

Choose Between Floor Options

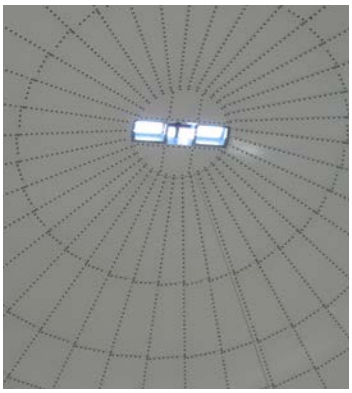
CST Storage understands the complexity that can exist when providing floor designs for digester tanks. That is why we offer options for our customers depending on their digester need. The customer can select from Coated Steel (Vitrium Glass or TRICO BOND EP® Epoxy Coating), or reinforced concrete. Concrete digester floors can vary from flat up to a 45° conical shape. Utilizing our worldwide regional offices and Authorized Dealer network we can work with the customer to provide the most economical floor design and installation that is required for the project.

Hybrid Tanks & Other Options

The unique design of CST Storage's bolted tanks easily adapts for hybrid tank designs that utilize the strengths of multiple state-of-the-art coating systems. We can design tanks with different coating systems for the gas and liquid zones of a digester that create a unique storage solution that cannot be accommodated by concrete or field welded designs. CST Storage also offers tanks constructed of stainless steel and uncoated steel when design specifications demand these options.

Accessories – Optional Equipment:

- Nozzles
- Baffles
- Site glasses
- Roof walkways and railings
- Caged ladders and platforms
- Cross walks
- Sidewall manway ports
- Insulation
- Passive & active cathodic protection



MULTIPLE TANK COVER OPTIONS FOR ALL ANAEROBIC DIGESTER APPLICATIONS

CST Storage includes the industry's best cover options for digester applications. The gas zone of a digester is the most corrosive area and requires appropriate design. Along with this corrosiveness, there are many other factors (environmental, mixer loads, pressure, vacuums, ancillary equipment loads, etc.) that need to be considered in cover selection. CST Storage can design and engineer the right solution from the multiple cover types in its portfolio.

ESR - Externally Supported Roof

This is the most common roof design in the industry with a smooth internal roof surface and no rafters. The design can be used when moderate to high pressure or vacuum design limits are anticipated. It is also preferred when there are heavy load conditions expected from mixers and/or other ancillary equipment is installed in the cover. Roof panels can be designed with Vitrium glass-fused-to-steel coating, OptiBond Epoxy Coating System or stainless steel.

GD - Geodesic Dome

Geodesic dome design can be utilized on storage tanks where no pressure and vacuum are required. All-aluminum design is lightweight, free-span and resists corrosion better than many other alloys.

KR - Knuckle Roof

An option for smaller diameter storage tanks, a knuckle roof is best suited for lighter pressure and vacuum applications with no load bearing requirements. Fabricated from stainless steel to provide excellent gas zone longevity.

TM - Dual Membrane - Tank Mounted

Designed to operate in applications with low to moderate gas pressures where there is not a design requirement for a fixed steel cover. Multiple layers and optional center mast and strap systems are utilized depending on design considerations.

GM - Dual Membrane - Ground Mounted Gas Storage

Gas holders are commonly used in conjunction with other storage vessels to store and regulate gas from the process. The gas can then be regulated and delivered to a power generation process, boiler or other gas processes

Roof and Membrane Options and Specifications

Roof Type	Max. Design Pressure	Max. Design Vacuum	Max. Diameter	External Loads	Coatings / Material
ESR - External Supported Roof	45 mbar 18" WC	5 mbar 2" WC	37.5 (m) 123 (ft)	Accommodate heavy loads (including roof mounted mixers)	Glass, Stainless Steel, Epoxy
KR - Knuckle Roof	20 mbar 8" WC	5 mbar 2" WC	9.5 (m) 31 (ft)	Limited	Stainless Steel
TM - Dual Membrane (Tank Mounted)	10 mbar 4" WC	3 mbar 1.2" WC	36.6 (m) 120 (ft)	None	PVC Coated Polyester
GM - Dual Membrane (Ground Mounted)	40 mbar 16" WC	3 mbar 1.2" WC	Various	None	PVC Coated Polyester
GD - Geodesic Dome	Atmospheric	Atmospheric	304.8 (m) 1000 (ft)	Accommodate standard loads such as walkways, platforms, manways, etc	Aluminum

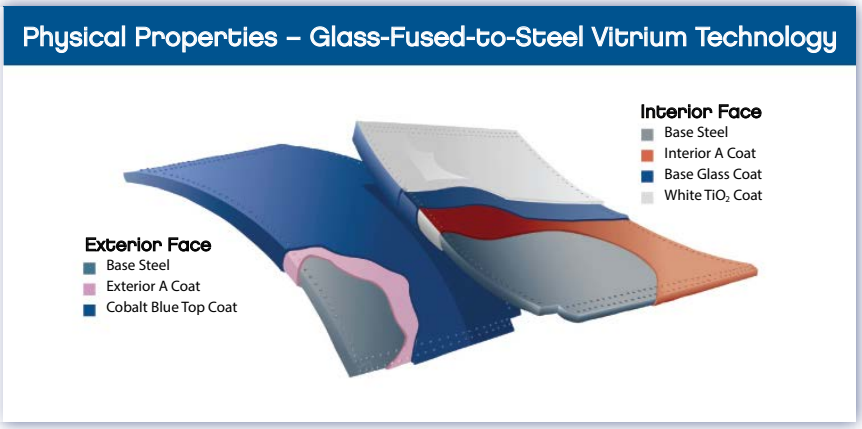
Note: Higher pressure dual membrane (DMF) and higher pressure/vacuum external supported roof (ESR) need to be reviewed as special requests.

COATING TECHNOLOGIES FOR ANAEROBIC DIGESTER STORAGE SOLUTIONS TANKS

CST Storage provides its customers with the data and information they need to make the right coating technology decision for their application. The only company that designs and manufactures multiple state-of-the-art coating technologies, CST Storage provides our customers options in selecting which coating technology is best for each application – unlike companies with only one technology to offer.

Glass-Fused-To-Steel

Vitrium™ glass-fused-to steel is the premium coating in the digester tank market. It is a single, strong, integrated glass and steel material fused together at 1,500˚F (816˚C) in a controlled process furnace. The physical properties of Vitrium are specially suited for digester applications. The hard, inert barrier on both the interior and exterior tank surfaces guards against corrosion. Vitrium internal glass coating is impermeable to liquids and vapors, provides resistance to undercutting caused by corrosion and offers excellent impact and abrasion resistance.



Vitrium technology combines the outstanding chemical and physical resistant properties of titanium dioxide-enhanced (TiO2) glass with a highly engineered, ultra-fine glass bubble structure for durability and flexibility. Our glass-fused-to-steel coatings range from 7-15 mils (175-380 microns) on the exterior and 10-18 (260-460 microns) on the interior. Interior sidewalls are tested to be holiday free using the industry standard low voltage wet sponge testing method. High voltage dry testing method can be provided upon customer request.

CST Storage tanks made with glass-fused-to-steel outperform other digester tanks, making them the best choice to contain the aggressive liquids found in today's Anaerobic Digester facilities.

Anaerobic Digester Tank Design

ITEM	TYPICAL	OPTIONAL
Diameter/Height Ratio	1.0:1.0/1.2	1.0:1.0 thru 7.0:1.0
Pressure	5-37 mbar (2"-15" WC)	Up to 60 mbar (24" WC)
Vacuum	2.5-7.5 mbar (1"-3" WC)	Up to 20 mbar (8"WC)
Specific Gravity	1.05	Up to 1.8
Temperature	(35°-40°C) 95°-105°F	(60°C) 140°F
External Supported Roof Slope	15°	10°-20°
Mixers	Top Mount/Sidewall	Jet Mix / Liquid Recirculation / Gas
Baffles	Yes	Yes
Ladder, Walkways, Platforms	Standard-Straight	Wrap Around
Concrete Floor	Flat	Conical
Steel Floor	Flat	Glass/Epoxy

AQUASTORE®

Glass is fused to steel at 1,500˚F (816˚C) in a state-of-the-art furnace.

HYDROTEC®

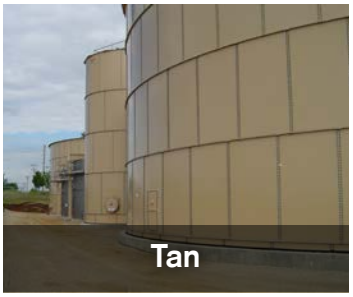
OptiBond™ Epoxy Coating System

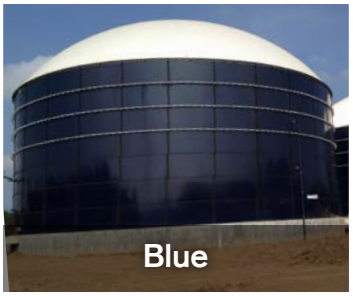
Our proprietary TRICO BOND EP® Epoxy Coating provides excellent corrosion resistance and long tank life for the finest epoxy coating available in the liquid tank industry. In the process, parts are degreased and rinsed, hot air dried and pre-heated at an optimum temperature.

Part surfaces are then blasted with engineered grit material. This creates a rugged 3-D surface topography ideally suited for better powder coating adherence, increased durability and long-term coating performance. Then they are powder coated in a proprietary electrostatic booth with precise environmental controls, and cured at a tightly regulated temperature to maximize the cross-link bonding of the epoxy materials.

A uniquely engineered polyurethane topcoat is applied on exterior surfaces. This provides added UV protection and extends the coating life in tough outdoor conditions. A final curing stage through the oven is the last step in the CST process before our stringent quality control inspection – a high voltage defect testing procedure to identify any holidays, inclusions and thin areas in the coating.

Available Colors





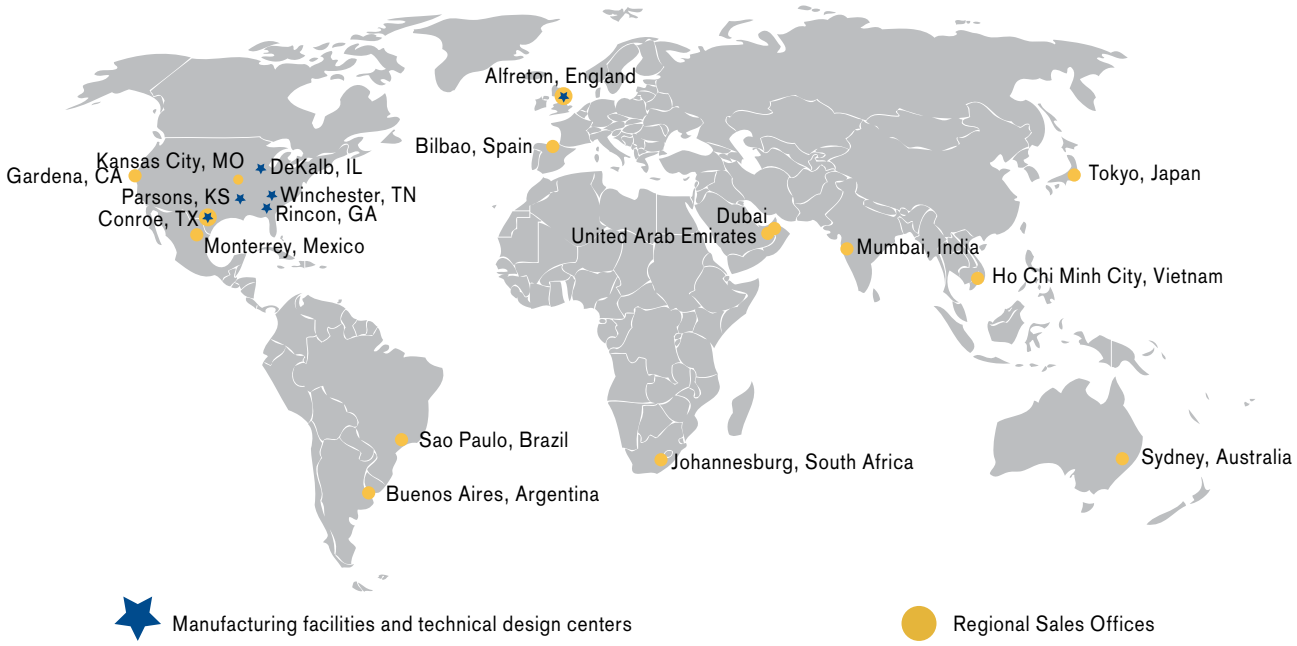
Component Comparison

PANEL TYPE	DIGESTER ZONE	DESCRIPTION
Vitrium™ Glass-Fused-to-Steel	Liquid Gas	- High Specification 3-coat Glass Coating - High Performance - Low Maintenance - Sidewall, Covers, Floors
TRICO BOND EP® Epoxy Coating	Liquid Gas	- Proprietary Thermoset Coating - Exceptional Performance - Sidewall, Covers, Floors, Manway, Flanges, Baffles
Stainless Steel	Liquid Gas	- Grade 316 or 304 - Excellent Resistance Gas Zone - Sidewall, Covers, Manway, Flanges, Baffles
Uncoated Steel	Liquid	- Can be used as sidewall in non-corrosive liquid zones

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 Anaerobic Digester needs.

CST Global Manufacturing Facilities and Offices



Worldwide Network of Support

Bid and quotation services for CST Storage are available worldwide. Authorized Dealers and Factory-Trained Builders are located on every continent, providing construction and after-installation services.

Authorized Dealer Network

Authorized Dealers offer a complete storage solution for the life of the digester tank from specification to construction to service. No other tank company has the years of experience and history of service that you only get from our dealer network. All design and engineering for CST Storage is done in-house for quality control and process efficiency.

Go to **www.cstindustries.com** for more information on CST products and services.

CST STORAGE

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