

# DRY BULK

# STORAGE



**In Dry Bulk Storage, The BIGGEST & The BEST in Bolted Tank Construction come from ONE Company, Tank Connection!**

**TC's precision RTP (rolled, tapered panel) construction is the #1 BOLTED HOPPER TANK DESIGN specified & selected for dry bulk storage applications.**

*There's a reason why everywhere you look you find Tank Connection!*





## Snapshot Company Profile

Tank Connection is an industry leader of custom designed dry bulk storage tanks and integrated storage systems. The company maintains a unique perspective as the only tank manufacturer worldwide that offers all types of steel storage systems including bolted RTP (rolled, tapered panel), field-weld, shop-weld, SIT and hybrid tank construction. Their storage products and services are recognized as the best offered in the industry. The company is also recognized as experts in design, manufacturing and field installation of the largest bulk hopper tanks in North America. Tank Connection operates four manufacturing plants in the U.S. with over 300 employees dedicated to integrated storage systems.

## Bolted RTP Construction

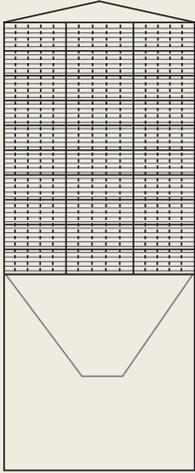
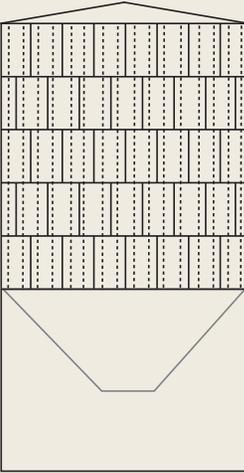
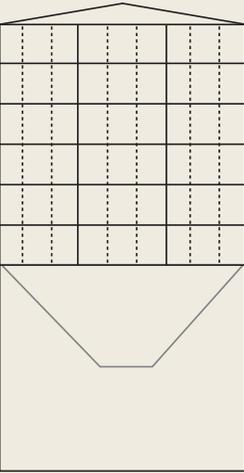
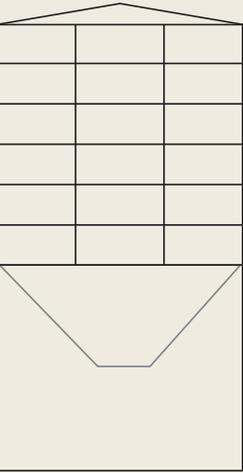
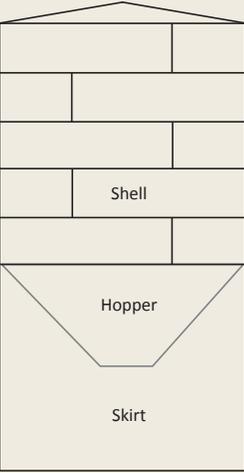
Manufactured in precision RTP (rolled, tapered panel) smoothwall construction, the RTP design has become the bolted hopper tank “product of choice” for the storage of dry bulk materials. Unlike the older API 12B flanged panel tanks that have a history of continuous leaks, the RTP tank design does not leak. It features a smoothwall tank interior (no ledges), exact manufacturing tolerances and the top-rated powder coat process available for bulk storage applications.

Tank Connection also provides complete turnkey field installation services, utilizing direct factory crews. Field installation is accomplished utilizing a synchronized, hydraulic screw jack process that allows field crews to install tanks at grade level. This installation process receives the highest industry ratings for quality control and safety in the field.

TC’s bolted hopper tank designs are robust, providing unmatched performance in bulk storage applications. RTP tanks are available in unlimited hopper configurations including mass flow, funnel flow, and expanded flow designs. Active, passive and fluidized discharge of bulk powders are typical. Tank support configurations include skirted designs, drive-through skirted designs, tanks elevated on structural steel and on load cells.

## Understanding XL Steel Hopper Tank Design

What level of design and quality does your application require?

					
<b>TYPE</b>	Corrugated	API 12B With Shell Stiffeners	Bolted RTP With Shell Stiffeners	Bolted RTP Construction	Field-Weld Construction
<b>DESIGN</b>	4 stiffeners per panel	2 stiffeners per 5' wide panel	2 stiffeners per 10' wide panel	10' wide panel	Panel size varies
<b>APPLICATION</b>	Grain	Grain, Light Bulk, Plastics & Other	Bulk Industrial Process	Heavy Bulk Industrial Power Industry	Heavy Bulk Industrial Power Industry
<b>RATING</b>	D	C	B	A	A
	◀◀ LIGHT DESIGN "D"				HEAVY DESIGN "A" ▶▶

In today's market, there are a wide variety of bulk storage systems available, ranging from light commodity tank designs to heavy field-welded designs. Some storage products are designed to "stand the test of time" while others are designed for a limited service life. When specifying a dry bulk storage system, always select high quality construction that will provide extended service life and requires low maintenance. With the limited exception of storing light bulk density materials, tank designs selected for bulk storage should be robust. In all cases, the selected storage system should provide trouble-free field performance, which equates to total stored material protection and reliable hopper discharge interfaced with the process system.

In bolted tank construction, the older API 12B flanged panel tanks evolved out of the oil patch territories in the early 1900's. This product was eventually utilized for the storage of grains and plastic pellets. In the storage of heavier bulk density materials, the bolted flanged panel tanks were limited in size. When utilized in larger hopper storage applications, the product developed a history of continuous leak issues.

With the introduction of bolted RTP (rolled, tapered panel) hopper designs in the last decade, confidence was reinstalled in the industry with a precision bolted panel design that was not only robust, but did not leak in the field. With a proven record of field performance, the RTP design quickly moved to the front of the line as a preferred "product of choice" for XL bulk storage applications. Similar developments also occurred in the power industry with bolted RTP construction favored and specified over field-weld and slip-form concrete construction.

The best dry bulk storage products available in the industry today remove the problems of the past, with a field performance history of excellence. There is no reason to settle for marginal and light storage tank designs when premier bulk storage systems can be installed for the same cost.



*The BEST features of bolted and field-weld tank construction have been combined together in the RTP design. It remains unmatched in the industry in all category ratings*

- ❖ The superior bolted hopper tank design for dry bulk storage
- ❖ Utilizes unmatched factory applied powder coating systems
  - Fusion 5000 FBE™ interior
  - Fusion 5000 FBE™ & SDP™ exterior
- ❖ Outdates API 12B bolted flanged tanks with a precision panel design that does not leak
- ❖ Long life...low maintenance storage
- ❖ Modular construction - shipped worldwide
- ❖ Typical hopper tank capacities available in sizes from 2,500 up to 150,000 cubic feet
- ❖ Installs in 1/3 the time required for field-weld tank construction



**BEST**

**AVERAGE**

**POOR**

**PRODUCT RATING**

**DRY BULK**

### **Bolted RTP Tank Design**

- Panels are horizontal 5' high x 10' wide
- Utilizes RTP (rolled, tapered panel) technology for precision alignment and exact fit

Dry bulk storage applications can utilize steel up to ½" plate in the tank sidewall with WF structural support stiffeners in the skirt area. Hopper compression areas both interior and exterior can utilize steel thickness in excess of 1" plate.

The RTP (rolled, tapered panel) bolted tank design is every bit as stringent as welded tank construction. Once assembled in the field, each bolted seam maintains an exact calculated value as reviewed through four types of analysis including bolt shear, net section, bearing analysis, and edge tear-out. In contrast to field-weld construction where a single analysis (joint efficiency) is reviewed and is subject to uncontrolled field conditions, bolted sectional seam analysis is finite and controlled.

#### **Product Review:**

- ❖ #1 performance hopper tank design
- ❖ The NO LEAK bolted storage tank
- ❖ No internal ledges
- ❖ Heavy tank designs for bulk storage applications
- ❖ Unmatched fusion powder coating system
- ❖ Field construction – top rated process, jack installation from grade level

**Product Rating Dry Bulk: Excellent**



## API 12B Flanged Panel Tank

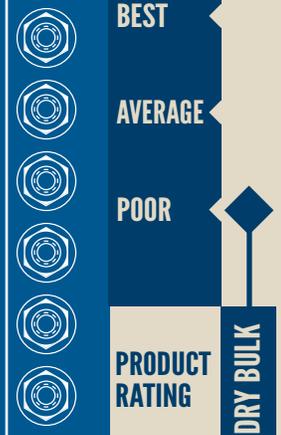
- Panels are vertical 8' high x 5' wide
- Utilizes an exterior horizontal flange connection referred to as a chime

Still marketed today as advanced and improved, the API 12B flanged panel tank is an outdated bolted tank design that originated in the oil patch territories in the early 1900's. The big problem with the flanged panel design is the exterior horizontal flange/chime connection, which has a history of continuous leaks. Additionally, the exterior flange connection creates a ledge that holds material, moisture, and debris, which removes paint quickly. Typically, you will witness this product in the field with rusty horizontal connections from top to bottom of the tank.

### Product Review:

- ❖ Archaic / outdated tank design
- ❖ Chime lap connection has a history of continuous leaking
- ❖ Light tank designs only (up to ¼" plate)
- ❖ Horizontal flange connection creates 2" exterior ledge which holds moisture, material and rusts quickly
- ❖ Internal ledge holds material
- ❖ Outdated construction process elevates field installation crews in the air on scaffold planks

**Product Rating Dry Bulk: Poor to Average**



## Bolted VFP Tank Design

- Panels are vertical 8' high x 5' wide
- Utilizes VFP (vertical flat panel) design developed to remove the problematic (chime) flange connection on the API 12B tank

VFP bolted construction is a poorly conceived tank design. The use of this product has been limited and the product review is poor. (In essence, if you chop-off the external flanges of an API 12B panel, you have a vertical FP design.)

When scaffold built, the tall and narrow panels tend to fold over in low wind conditions, as they have no rigidity. There is no merit of a VFP design, except that it allows the use of older, existing field construction equipment (i.e, air tigger and gin pole.), which is also considered outdated by today's field construction technology.

### Product Review:

- ❖ Vertical flat panels – poor design
- ❖ Unsafe field installation process
- ❖ Designed to replace the API 12B tank design
- ❖ Outdated construction process elevates field installation crews in the air on scaffold planks
- ❖ Aesthetic review – poor

**Product Rating Dry Bulk: Poor**

**In bulk storage applications, Tank Connection designs, manufactures and installs more XL bolted hopper tanks than any other company in North America. Tank Connection simply leads the industry with bulk storage systems that perform!**

Tank Connection offers the top performance products and services available in the industry today:

- ❖ Bolted RTP hopper tanks
- ❖ Shop-welded hopper tanks
- ❖ SIT's (system installed tanks)
- ❖ Hybrid storage designs
- ❖ Field-welded storage tanks
- ❖ Integrated storage systems
- ❖ Bulk storage covers and containment products
- ❖ Non-union & Union field installation services
- ❖ The most knowledgeable team of experts on dry bulk storage applications
- ❖ Always "Golden Rule" customer service on every project



Tank Connection is an ISO 9001 certified company. TC leads the storage industry in application expertise, storage innovation and solutions, storage tank manufacturing technology, vertical integration of operations and field construction services. When you specify Tank Connection, you have selected the top performance storage systems and field construction services available globally.

*You can't specify or procure "BETTER THAN THE BEST" in the industry!*



For more information on Tank Connection Affiliate Group, visit our website at:  
[www.tankconnection.com](http://www.tankconnection.com)

