



# **Bolted Tanks in the Water/Wastewater Industry**

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and  
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# Bolted Tank Overview

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The purpose of this seminar is to discuss the manufacturing, application, and decision process for determining the selection of either epoxy coated carbon steel, stainless steel or glass fused to steel bolted tanks.

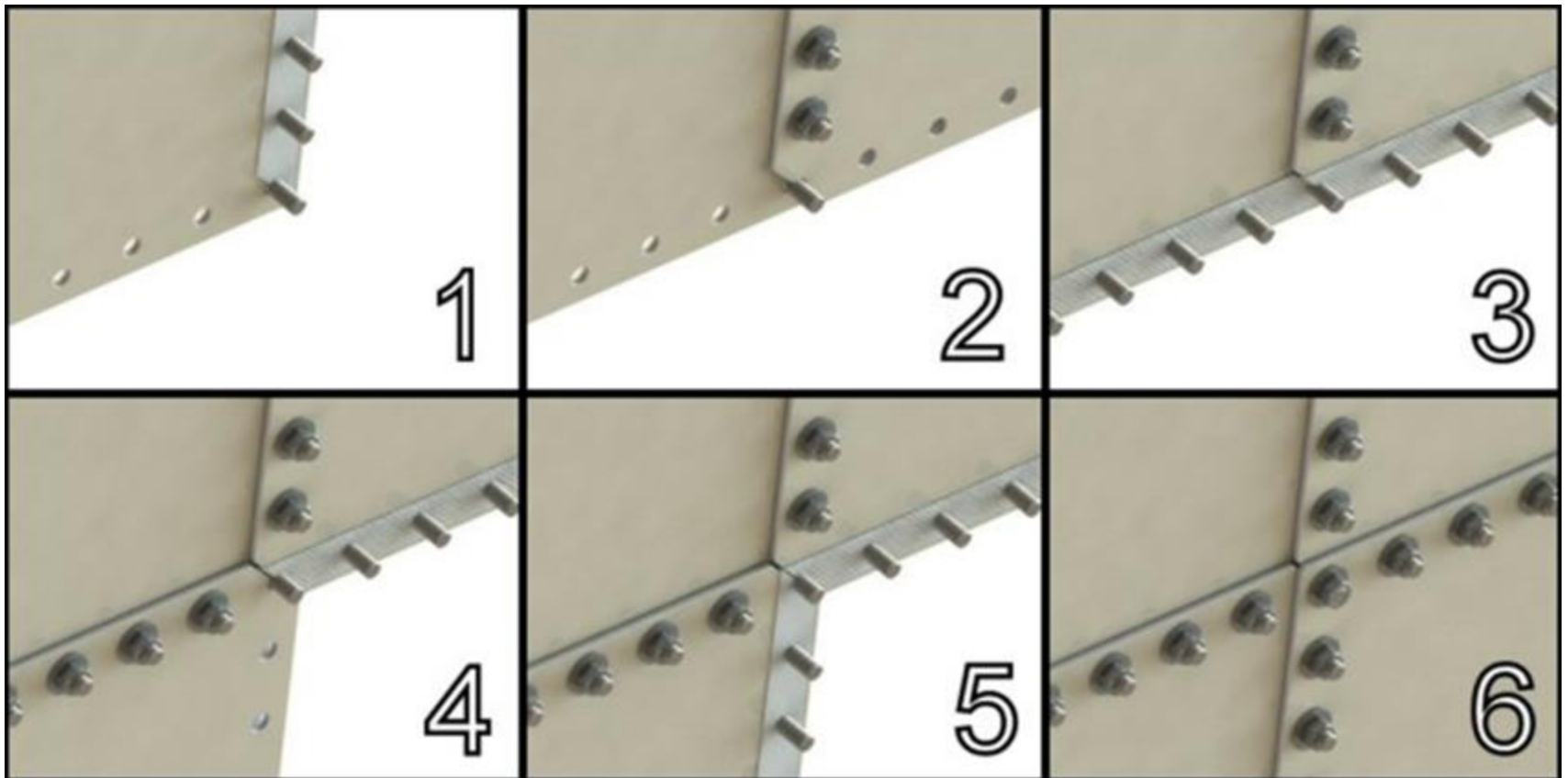
# Types of Bolted Tanks / Applications

- Types of bolted tanks:
  - Coated carbon steel tanks
  - Stainless steel tanks
  - Glass-fused-to steel tanks
- Bolted tank applications:
  - Water and wastewater
    - Potable Water
    - Clarifiers
    - Anaerobic Digesters
  - Energy and power
  - Oil and Gas
  - Dry Bulk Materials
  - Fractional Sand Processing Facilities

# Bolted Tank Advantages

- Bolted tanks offer outstanding performance, reliability and ease of installation. Advantages include:
  - Speed and ease of manufacturing.
  - Provides a smooth interior wall surface superior to older flanged panel designs.
  - Green friendly, eliminating environmental concerns.
  - Lower erection cost due to economical shipping and elimination of field welding.
  - Bolted tanks can be relocated and expanded, improving residual value.

# Bolted Tanks



# Bolted Tanks

**Flat panel overlap**



**Optional exterior nut caps**



# Bolted Tank Construction and Erection Process

- Bolted tanks are erected from ground level with a jacking system, improving safety at the construction site
- This eliminates expensive cranes and improves the ability to work in tight spaces
- This method provides the most safe and cost-effective construction in the industry



# Bolted Tank Construction and Erection Process (Continued)





# Construction in Tight Spaces



# Coated Carbon Steel Tanks

- Panels are finished in a factory with a thermal fusion bonded powder coating.
- Powder coating techniques result in superior coverage to ensure long-term service in the field and protect at a wide temperature range
- Powder coating is electrostatically applied and thermally cured, all within a factory-controlled climate which equates to extremely low emissions for environmentally sound production.
- The powder coating is formulated to adhere to tank panel edges as well as inside bolt holes to ensure a thorough coating.
- 2-part powder coating thermal cross link systems ensure adhesion from the base coat to the exterior color chosen for top coat.
- Factory applied powder coating performance cannot be duplicated by field applied coatings.

## Quality Control - Coated Carbon Steel

- Each coated panel is 100% holiday tested when it leaves the factory.
- Shipment pallets are built job specific and built larger than panels to eliminate coating or transportation damages.
- Panels are bolted to pallets in sequence of erection. This eliminates handling panels excessively.
- Protective sheets are placed between each panel while stacked on shipping pallets.



# Stainless Steel Tanks

- Friendly to the environment, no painting, no rust and no solvents
- Corrosion Protection - Stainless steel is significantly more resistant to oxidation by water than carbon steel which means an external or internal coating is not required, nor a cathodic protection; thereby reducing system costs and makes stainless steel more compatible with the environment.
- The longevity of stainless steel is the result of the alloying composition and therefore, it has a natural corrosion resistance. It does not need additional systems to protect the base metal.
- Hygienic Materials - Due to very high passive film stability, stainless steel is basically inert in potable water which maintains water quality and drinking integrity.
- Stainless steel is used for high purity pharmaceutical water, food products, and ANSI/NSF drinking water.

## Stainless Steel Tank – (Continued)

- Green / Recyclable: Over 50% of new stainless steel comes from old re-melted stainless steel scrap, thereby completing the full life cycle.
- Virtually Maintenance Free - Does not require coating and is resistant to a wide range of chemicals.
- Stainless steel remains ductile at all temperature ranges.
- UV Resistance - Stainless steel properties are not affected by exposure to UV light which degrades paint and other coatings.
- Friendly to the environment, no painting, no rust and no solvents

# Glass-fused-to-Steel Tanks

- Vitreous enamel (glass) coating is the perfect system to combine the benefits of steel and glass in one single material.
- The liquid enamel fuses during one or two fire processes at 850°C to become a new material.



# Glass-fused-to-Steel Tanks

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- High resistance to aggressive media and atmospheric
- High durability
- Easy maintenance and cleaning
- Operational duty time considerably reduced
- Short manufacturing times
- Expandability and movability
- High efficiency and equivalent value

# Potable Water – Quapaw, OK





# Wastewater – Albuquerque, NM



# **Glass-fused-to-Steel, Anaerobic Digester, Internationally located**



# Stainless Steel Wastewater – Massillon, GA



# Potable Water – Hackberry, TX



# Anaerobic Digester – La Salle, CO



# Wastewater – Barnwell, SC



# Contact Information

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