

PRE-STRESSED TANKS

Water Tanks

Posttension concrete water Tanks



LNG Tanks

Posttension Liquefied Natural Gas Tanks



Silos

Posttension Concrete for Silos walls, Foundation and Roofs



Benefits of post-tensioning for tank & silo solutions include:

- Long term performance and structural stability of water reservoirs can be greatly enhanced by taking a post-tensioned approach to their construction
- Post-tensioning of wastewater treatment tanks has been proven as a fast, efficient & economical way of constructing new facilities
- Post-tensioning, combined with a fast, slip-formed approach to construction, provides speedy delivery to support industrial or factory expansion and upgrading programs for materials & foodstuff storage

Versatile

Tanks can be constructed in many shapes to suit project needs. Shapes include circular, rectangular, rectangular with rounded corners, egg-shaped digesters, irregular-shaped polygons, and oval – there are no practical limitations with this method of construction. Tanks are appropriate for all types of liquid containment including chilled and potable water, storm water retention, sludge, wastewater, digesters, ethanol, petroleum products, and liquefied natural gas. They also are used in the storage of granular materials such as coal, grains, ash, cement, clinker, and nuclear containment.

Durable

Because of its durability, cast-in-place post-tensioned concrete is recognized as the preferred method of construction for many types of structures exposed to the environment and other corrosive elements. Post-tensioning tendons have multiple layers of corrosion protection including the highly pre-compressed concrete cover, thick polyethylene ducts filled with high-performance grout or a corrosion-inhibiting coating, encapsulated anchorages and watertight duct connections. With the highly developed design methodology, structural detailing, and applications in high seismic zones - pre-stressed concrete tanks have the proven ability to withstand severe earthquakes. Constructable

LNG TANKS

ESPT offer design, Supply and construction of Pre-stressed [Posttensioned] LNG Tanks includes supply of Ultra Low Reinforcement includes necessary construction equipments and Experts that support Contractors throughout the project.

LNG storage tanks normally consist of a steel inner container and concrete outer container which are designed and built by different specialist firms. The design and, more specifically, the fabrication/construction cannot be carried out separately.

EN 14620 Part 2 [14] specifies the general requirements relevant to the materials, design, fabrication, welding methods, welding, construction and installation of metal components for tanks. The types of steel required are defined depending on the liquefied gas to be stored, and hence the respective temperature and type of tank.

- The permissible stresses in plates and weld seams during normal operation and testing are defined, also the minimum thickness of the metal shell, which is 40mm for butane and propane tanks, 50 mm for ethane and LNG tanks.

Prestressing steel, anchorages and ducts must comply with EN 1992-1-1. Furthermore, it is necessary to verify that the prestressing steel and the anchorages are suitable for the low temperatures to which they will be exposed. The section on conventional steel reinforcement distinguishes between temperatures above and below -20°C , as in the preceding standard, BS 7777. Conventional reinforcement for design temperatures that do not drop below -20°C during normal operation or abnormal conditions only has to comply with EN 1992-1-1.



Ultra Low Temperature Steel (-170 °C)

Reinforcement and socket couplers in tension components and subjected to temperatures below -20°C must satisfy additional requirements. Cryogenic reinforcement, i.e. reinforcement with a higher content of nickel and other alloying constituents, is normally used for the inside face of the concrete wall because the temperature at the level of the reinforcement can drop to about -150°C during the “liquid spill” load case.



ULTS has been developed for the construction of large scale LNG Tanks. SAS ULTS has been used for a variety of LNG projects throughout the world and has surpassed all required testing to be used in such demanding applications.

ULTS 500/600 fulfills all the requirements set forth in the updated DIN EN 14620-3, the internationally adapted standard for ULTS material testing.

Grade 500/600 ULTS is the threaded bar solution and cost cutting alternative to cryogenic rebar. The very high ductility of the material exceeds the requirements of the standards for ultra-low temperature applications.