

## Chemical Storage Tanks to AS1692

**Project:** 2 x 140,000L Storage Tanks plus Access System

**Location:** Victoria

### **Project Specifications:**

Two 140kL chemical storage tanks fabricated from grade 2205 duplex stainless steel, complete with access system. Specific footprint available for the tanks, located in a bunded area.

### **Design Considerations:**

The storage of flammable chemicals required design to *Australian Standard AS1692: Steel tanks for flammable and combustible liquids*. As such, the structural engineering design was completed in accordance with the normative (standard requirements in AS1692 Appendix B). Hence relevant sections of *Australian Standard AS1210 : Pressure Vessels* were utilised by our in house design team to check that necessary design requirements were met.

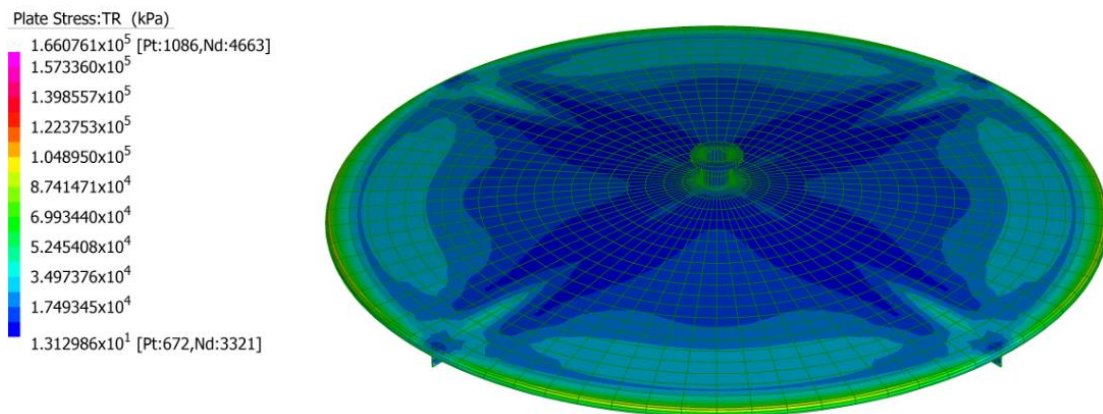
The associated access system was designed to *Australian Standard AS1657: Fixed platforms, walkways, stairways and ladders – Design, construction and installation*. Furphy Engineering designs, fabricates and galvanizes access systems at our Shepparton plant to provide a complete storage vessel solution. The platform was designed to negotiate the bund wall and supply a suitable location for the base of a vertical caged access ladder.



Site Installation

### Additional Design Considerations:

The top cone of the tank was limited to a shallow angle of 10 degrees to meet the customer's site requirements, over and above the code requirements. A cone angle such as this is inherently weak so additional calculations are required to deliver a safe, compliant design solution. We utilise finite element analysis for this.



Finite Element Analysis of Top Cone

The footprint of the tanks meant their tall aspect ratio also required the design *AS1170.2: Wind Loads and AS1170.4: Earthquake Loads* and the use of chemset anchors. The quantity of these needed to be minimised while respecting offset distances between anchors and the concrete edge.

Tanks were designed and fabricated at Furphy Engineering's Shepparton plant in Victoria, using stainless steel sourced through Australian-based supply outlets. The 10,000 square metre manufacturing facility is ASSDA Accredited as a Quality Stainless Steel Fabricator with ISO9001 certification in management systems for superior quality assurance.

### Inspections & Testing Requirements:

In addition to weld inspections and examinations throughout the manufacturing process, a final leakage test to AS1692 is performed at the completion of fabrication, using a dedicated indoor hydrostatic testing facility within our workshop. Our indoor testing facilities ensure tests are carried out appropriately to prove all tank elements, irrespective of inclement weather or unsuitable outdoor conditions.

For more information visit <http://www.furphyengineering.com.au>

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