

1 Introduction

Best Maintenance Services by Dedicated Storage Tank Manufacturer



As a dedicated storage tank manufacturer with more than 75 years of experience, TTK is committed to providing high value and world class customer service to our clients.

Using our extensive knowledge of the tank manufacturing, we can provide you with professional service of exceptional value.

Floating Roof Tank



Fixed Roof Tank



Double Wall Tank



Spherical Tank



2 Our Services

Tank Manufacturer's Optimum Maintenance Services



Our maintenance service can cover any type of defects / anomalies / deteriorations – the most typical is corruptions on the steel over a long time service.



Tank Roof



Tank Shell



Back side of the Bottom Plates



Accessories

3 Maintenance

3.1 Replacement of Bottom Plates

We can propose an optimum solution to replacement of annular plates and bottom plates after detailed inspections on the tank.



Lifting the Tank with Jacks



Annular and Bottom Plates Replacement



Foundation Repair

Tank Lifting Technique

Full Jack-up Method

- Full Jack-up Method allows foundation repair and bottom replacement to be done at a time.
- Use of special jacking systems ensures tank repairs to be completed in a safe and efficient manner.

Local Jack-up Method

- Local Jack-up Method is suitable for partial bottom replacement.
- This method can be adopted when the extent of repair is limited and so is the given time window.

TKK-Wedge Method

- TKK-Wedge Method is a non-jacking technique to replace the tank bottom by supporting the tank with support pieces and simple jigs only.
- This method simplifies the entire repair process and therefore reduces work time and safety risks.



Full jack-up method can be applied even to double wall tanks

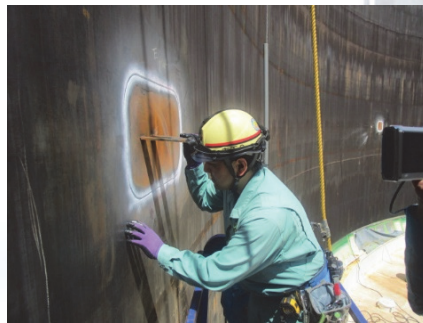
3.2 Repair with Patch Plate

We can provide a variety of maintenance services, from minor repair to substantial reconstruction.

Minor repair of corroded plate by using “Weld-on Patch Plate” is simpler, faster and yet effective a solution.



Thickness, dimensions, and surface condition of patch plates are checked.



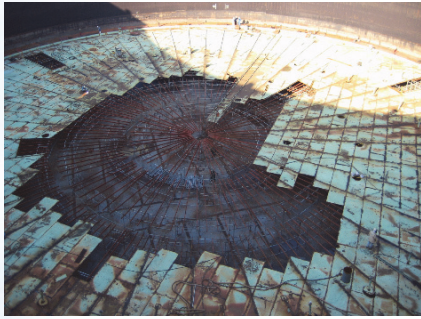
Patch Plate installation on the Shell
by butt weld



Patch Plate installation on the Bottom
by lap weld

3.3 Replacement of Floating Roof

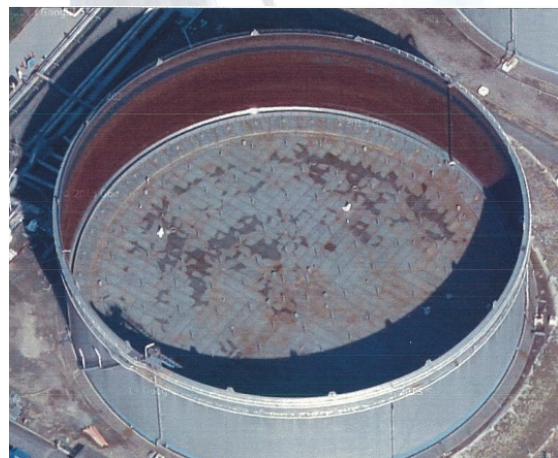
We can offer services for a complete replacement of any type of floating roof to the latest Codes and Standards.



*Dismantle
Existing Floating Roof*



Construct New Floating Roof



3.4 Floating Roof Tank Alteration



Roof type alteration from
“Open Top Floating Roof Tank” to
“Covered Floating Roof Tank”.



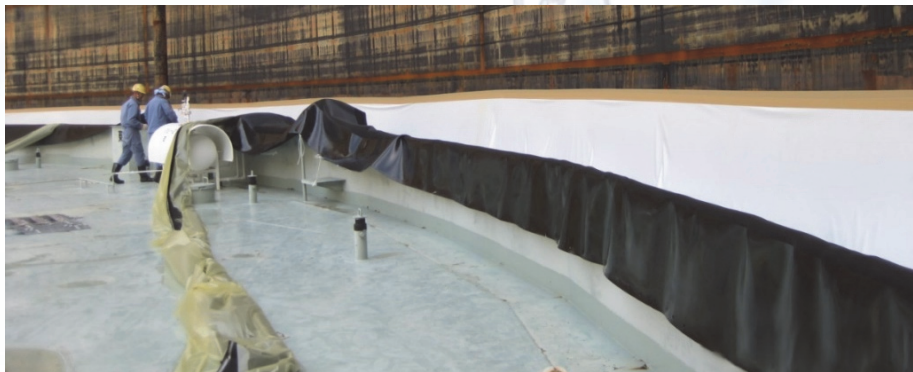
Open Top Floating
Roof Tank



Covered Floating
Roof Tank

3.5 Supply and Replacement of Tank Accessories

Through our professional inspection and diagnosis, we can make the optimum proposal of the replacement of floating roof seals, drains, and other accessories.



Floating Roof Seal Replacement



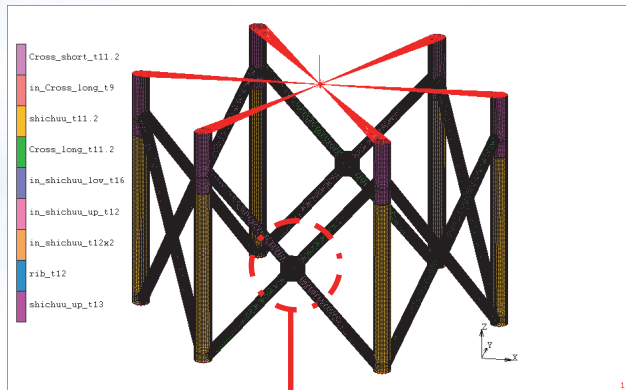
Floating Roof Drain System



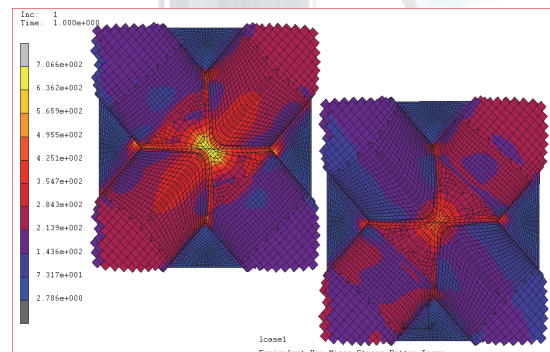
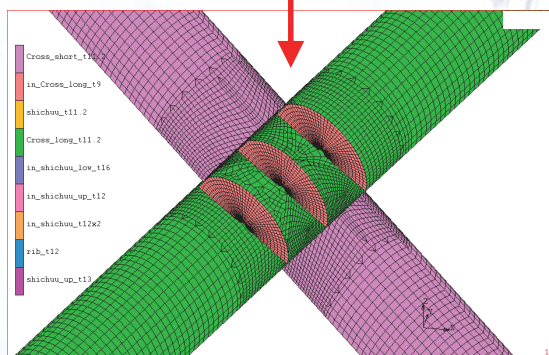
Bottom Heating System for Low Temperature Tank

3.6 Reinforcement of Spherical Tank Supporting Structure

In Japan, we assist the clients in reinforcing supporting structure of spherical tanks in accordance with the latest regulation (after the Mega-quake 2011). We apply FEM (Finite Element Method) analysis to the reinforcement planning.



Stress analysis of cross-bracing of Spherical Tank



3.7 Tank Dismantling and Reconstruction

We can undertake tank reconstruction services including dismantling of the existing tank in a safe manner at customer's demand.



Dismantling of Existing Tank

Reconstruction

4 In-Service Maintenance

4.1 In-service Inspection Items

- External Visual Inspection
- Ultrasonic Thickness Inspection
- Component Leakage Check
- Others



4.2 In-Service Maintenance Items

- Replacement of external accessories
- Re-Painting
- Perlite topping up

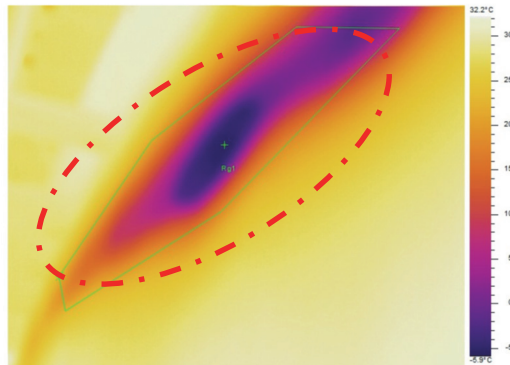


Perlite Topping-up for Double Wall Tank

After years in service, local settlement of the Perlite reduces the insulation efficiency, and causes cold spots on the outer surface of the tank. We can offer the perlite topping-up service on live tanks with proven methodology.



Frost on the shell plate
monitored by Thermograph



Perlite Hopper Installation
for Topping-up