



INDO PROJECTS CORPORATION

**TANK CALIBRATION &
PROJECT CONSULTANCY**

PROFILE



About US

It is our pleasure to introduce our company INDO PROJECTS CORPORATION, which has been operating as a new entity in the Tank Calibration Service and Project Consultancy. We are convinced that the three basic pillars of our services i.e. professionalism, effectiveness and complexity of solutions for our clients. We are currently working throughout India. We have been specializing in this business. Our client list includes the reputed organizations in India.

Our service area belongs to Oil & Gas sector, Steel & Power sector, Cement Industry, Liquor Industry (Distillery & Bottling Plant), Edible Oil Industry, Sugar & Biofuels Industry (Ethanol), Chemical Plant, Pharmaceutical Company and Fabrication Company and other places.

We perform tank calibration jobs according to the relevant Standards and the computerised gauging reports are prepared & certified by Govt. dept. to meet statutory obligation of Legal Metrology Dept. of Govt. and to ascertain gain or losses in sales or purchase.

OUR VISION

Since then we have grown across India and been spreading across international boundaries to extend our quality services to all types of organizations - big or small. Half of Iraq's oil exports go through our inventory system is a proof big enough of our capabilities. But no job is considered a small job. We get involved in all small things. We are motivated to climb higher in today's competitive contemporary industrial arena. We are committed to provide not only volumetric accuracy but complete survey solutions to our clients at competitive rates - both pan India and internationally.



SERVICE AT A GLANCE



- ◆ Tank Calibration
- ◆ Rope Access
- ◆ NDT Service
- ◆ Others

PROJECT CONSULTANCY

- ◆ Tankage Project (Fabrication, Mechanical, Civil, Instrumentation & Electrical)
- ◆ Tank M & I
- ◆ EPCM, EPCC, LSTK
- ◆ Pipeline Project
- ◆ Others



TANK CALIBRATION



Proper Calibration and Periodic Inspection of Tanks remain a critical requirement for the energy and marine sectors, in both onshore and offshore environments. Reliable quantity measurement is critical in worldwide trading and can only be assured by accurate and regular calibration.

Periodic Tank Inspection, Surveys and Calibration will help isolate potential risks, eliminating the likelihood of such occurrences.

- ◆ Tank Calibration (Vertical, Horizontal, Sphere & Rectangular)
- ◆ Tank Inspection as per API 653 (Tank Settlement Survey)
- ◆ Tank Health Survey (Roundness, Verticality/Plumbness)
- ◆ Settlement Survey of MSV as per OISD



ROPE ACCESS



Industrial rope access techniques provide a cost-effective alternative to traditional access methods, such as scaffolding or mobile elevated working platforms. Using advanced work-positioning systems, industrial rope access is a proven method of achieving a safe work position at height or in areas of difficult access. Inside Exploration Technologies employs the Industrial Rope Access Trade Association (IRATA) rope systems in all our ISO regulated rope access operations. The IRATA systems have an exemplary safety standard globally, based on a commitment to thorough training, stringent supervision, exacting equipment standards and diligent operating procedures. For more information see: www.irata.org. As an active member of IRATA, Inside Exploration Technologies upholds the exacting quality and safety standards demanded by this peak international association, ensuring our services to all our clients are industry best practice.

- ◆ Inspections using Rope Access
- ◆ Maintenance and Repairs using rope access
- ◆ Dropped object surveys (DROPS)
- ◆ Remote imaging (CCTV)
- ◆ Flare tip and flare line inspections
- ◆ Stack and chimney inspections
- ◆ Flare tip to splash zone maintenance and repair
- ◆ Blasting, Painting and Insulation activities
- ◆ Electrical & Instrumentation activities

NDT SERVICE



CONVENTIONAL NDT INSPECTION

Inspectors are qualified and certified in accordance with international certification schemes (PCN (EN 473/ ISO 9712), ANSI CP- 189 and SNT-TC 1A), assess flaws and defects in line with national and international standards and codes of practice.

- ◆ Liquid Penetrant Testing
- ◆ Magnetic Particle Testing
- ◆ Visual Testing
- ◆ Ultrasonic Testing
- ◆ Eddy Current Testing
- ◆ Radiography Testing
- ◆ Positive Material Identification
- ◆ Vacuum Box Testing
- ◆ Hardness Testing

ADVANCED NDT INSPECTION

Non-Destructive Testing has changed emphasis over recent years from a focus on detecting defects arising during the manufacture of new products, to detecting process induced integrity problems. IET has established itself at the forefront of these NDT technological advances, through its investment in state-of-the-art equipment and specialized technician training to meet this step-change. The result is a developing equipment infrastructure that offers a comprehensive range of advanced NDT services.

- ◆ Alternating Current Field Measurement (ACFM) Inspection
- ◆ Phased Array Ultra Sound Testing (PAUT)
- ◆ Time of Flight Diffraction Inspection (TOFD)
- ◆ MFL-Tank bottom Inspection
- ◆ Long Range Ultrasonic Testing (LRUT)
- ◆ Heat Exchanger Tube Inspection (Internal Rotation Inspection System (IRIS) and Eddy Current)
- ◆ Rapid Motion Scanner Inspection (RMS – Corrosion Mapping)
- ◆ Borescope Inspection
- ◆ TAPS (Tank Annular Plate Scanner)- Corrosion monitoring in the annular plate region of above ground storage tanks
- ◆ CUPS- Corrosion under Pipes Inspection- A new concept for the improved inspection of corrosion at the support region of pipelines using a short range ultrasonic guided wave technique that uses a collection of Higher Order Modes Clusters.



OTHERS



- ◆ As-built Drawing of Tank
- ◆ Layout Drawing of pipelines, Earth PIT, P & ID (ISOMETRIC / ORTHOGRAPHIC)
- ◆ Quantity Survey of Product Pipelines.
- ◆ Peso Certification
- ◆ Deals with Weigh Bridge (with installation) and Proving Measure.
- ◆ Supply of CI Weights
- ◆ Verification / Re-Verification, Stamping & Supply of Flow Meter
- ◆ Automation
- ◆ Tank Cleaning
- ◆ Tank Hydrotest

CALIBRATION

In measurement technology and metrology, calibration is the comparison of measurement values delivered by a device under test with those of a calibration standard of known accuracy. Such a standard could be another measurement device of known accuracy.

The benefits of accurate tank calibration

In measurement technology and metrology, calibration is the comparison of measurement values delivered by a device under test with those of a calibration standard of known accuracy. Such a standard could be another measurement device of known accuracy.



Why calibrate at regular intervals & is there any compulsion?

Imperceptible to the human eye, tank shells undergo expansion and contraction due to hydrostatic liquid head pressure, working temperature in regular operation and may also tilt and settle. These conditions can make a big difference in volume at various levels and dip reference height if left uncalibrated or wrongly calibrated. Also any structural changes or repairs made to the tank should call for re-calibration. In most cases you should also undertake a detailed tank settlement, roundness and tilt survey, which we also specialize. Calibration and stamping of storage tanks has been made mandatory in India at least once every 5 years by the Directorate of Legal Metrology and worldwide as per rule by the respective governmental or special agencies of the particular country.

Are we dependable?

Our company is a consortium of prompt, efficient, capable, experienced engineers and technical personnel. To achieve the highest pinnacle of accuracy, we are equipped with accurate and calibrated linear measuring instruments, precision digital optical laser total stations, ultrasonic devices, flow meters, other instruments and.. of course matter between our ears to analyze every tank individually. All field data are processed for analysis by our indigenously developed software and calibration charts printed error-free. We have implemented ISO 9001 : 2000 Quality Management System in our organization and undertake thorough quality checks at all stages. Any coordination with the government authorities is taken care of professionally. For critical and time-bound assignments, instant on-field computerized volume analysis and tabulation is also carried out. In any eventuality requiring clarification and problem solving, our promptness is exemplary.

Whether it be an inclined horizontal tank whose volume increases exponentially, a tank with uneven bottom, dished ends, blades and heating coils inside, a complicated bottom shell arrangement, a floating roof tank with liquid displacement to be taken care of, a pressurized horton sphere or a horizontal bullet, we are always a step ahead of a critical assignment - our engineering capability speaks on the ground. We have developed unique correlated physical, mathematical and error-free computer-aided volumetric solutions. Calibration or survey data can be provided on CD or sent via email in spreadsheet format, also for SAP and other integration.

Technical competence?

Are we traceable? What standards do we follow?

Calibration needs traceability and standardization. In India, we are licensee of the Directorate of Legal Metrology (Weights and Measures Dept) in states where we have been approved and follow their rules apart from BIS standards, which is also recognized by Customs, Excise and Central government CPWD department. Internationally, we follow various API and ISO standards for measurements and also as per requirements and rules in each country. Please see our methods section for more details on standards and methods.

TANK CALIBRATION PROCEDURE

ISO 7507-1 STRAPPING METHOD

Tank Calibration is the process of determining the Volumetric Content of a tank per unit height of liquid.

Calibration standards

API MPMS 2.2 A/ ISO 7507-1 Calibration of Vertical Cylindrical Tanks – : Strapping Method.

ISO 7507-1 Strapping Method

First an onsite reference circumferential strapping is done only on 1st and 2nd Shell with calibrated strapping tapes and dynamometer with a proper tension and repeated 3 times and a mean value taken. This circumference is taken roughly at apposition of one-fourth from upper or lower weld of the strake. A circumference measure at 1st or lower 2nd course is chosen because there is minimum distortion or loss of circularity at this position because the strake is welded to the annular bottom plates. An external diameter (and radius) is calculated from this circumference after applying necessary correction like temperature, step over (vertical weld). We call this reference radius or diameter. Other than this plate thickness measure with ultrasonic thickness gauge, dip reference height measures, tank and course height is taken. These are done ISO 7507-1 (same as IS 2007 or API MPMS 2.2A).

There are Two Methods That Can Be Used to Calibrate The Volume Below The Dip-plate in A Vertical Tank

The tank floor profile can be surveyed physically, using one of the following tools:

- ◆ An engineer's level or theodolite and staff.
- ◆ A laser plane and survey staff.
- ◆ A water tube or hydrostatic level tool.

The tank bottom is calibrated by filling with measured quantities of a non-volatile liquid, preferably clean water, as specified to a minimum level that covers the bottom completely, immersing the dip-plate & eliminating the effect of bottom deformations or, alternatively, calibration by physical survey using a reference plane to determine the shape of the bottom.

From data obtained the volume can be calculated mathematically. The tank floor can be calibrated volumetrically, using a meter or volumetric prover and water.

TANK CALIBRATION PROCEDURE (OTM)

Tank Calibration is the process of determining the Volumetric Content of a tank per unit height of liquid.

Calibration standards

The calibration shall be carried out by Optical Triangulation Method (OTM) in accordance with following Standards.

ISO 7507 – 1 Calibration of Vertical Cylindrical Tanks - Part 1 : Strapping Method.

ISO 7507 – 2 Calibration of Vertical Cylindrical Tanks - Part 2: Optical Triangulation Method.

ISO 7507-1 Strapping Method

First an on site reference circumferential strapping is done only on 1st and 2nd Shell with calibrated strapping tapes and dynamometer with a proper tension and repeated 3 times and a mean value taken. This circumference is taken roughly at apposition of one-fourth from upper or lower weld of the strake. A circumference measure at 1st or lower 2nd course is chosen because there is minimum distortion or loss of circularity at this position because the strake is welded to the annular bottom plates. An external diameter (and radius) is calculated from this circumference after applying necessary correction like temperature, step over (vertical weld). We call this reference radius or diameter. Other than this plate thickness measure with ultrasonic thickness gauge, dip reference height measures, tank and course height is taken. These are done ISO 7507-1 (same as IS 2007 or API MPMS 2.2A).

ISO 7507-3 OTM (Optical Triangulation Method)

In combination with circumferential strapping of a reference shell as per ISO 7507-1 (API MPMS 2.2A), we follow “Optical Triangulation method” for calibration of vertical cylindrical tanks as per API MPMS 2.2C (ISO 7507 – 3) International standard. Here we will see how we use a Digital electronic theodolite combined with computer software to get diameters for all the shells up to the top.

The main aim here is to find unknown radii of tank strakes from top to bottom. A calibrated surveying digital electronic theodolite or Total station with very high angular accuracy range of ± 2 seconds is used. The theodolite needs to be positioned arbitrarily at different positions around the circumference of the tank at an optimum distance from tank where the shells up to the top are visible through the telescopic viewfinder. On each position, firstly, the theodolite is placed on a tripod on firm ground and auto leveled both horizontally and vertically. The viewfinder is focused on the edge the tank strakes tangentially (tangential line of sight) at approximately one-fourth from top and bottom

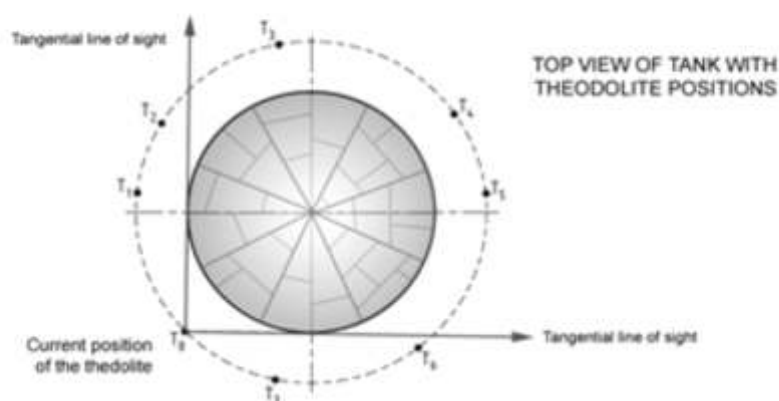
TANK CALIBRATION PROCEDURE (OTM)

welds. From left edge of the tank to the right edge the theodolite is swept horizontally which gives us an angular reading in degrees, minutes and seconds accurate to 1/3600 of a degree. This process is done all the shells at 2 positions per shell from one particular theodolite/station position. Similarly it is repeated around the circumference at various positions. The minimum number of positions around the circumference is mentioned as per rule (like 16 positions for a tank of 300 mtr circumference), but we take more where possible so that the number of radii per level achieved from triangulation (as described below) is more, which gives a greater accurate mean radius for a particular tank strake.

For each angular measurement, tangential lines of sight on a horizontal plane on the 2 sides of the tanks from the theodolite and the geometric central line from the theodolite to the center of the tank create a facility for mathematical triangulation in every horizontal plane, which enables us to measure required unknown radius of the other shells from the known reference radius (measured by strapping described above), If we make X positions around the circumference, we get X no. of radii for one particular shell position. Since there are 2 points of measurements per shell (top and bottom from horizontal welds), we get 2 number of radius per shell, which gives us a mean value of radius for a shell of excellent accuracy, more so because this process can also take care of tank deformations (the radii gets reduced or increased in those deformed positions) as the station positions are being rotated. This process also gives data for tank circularity and tilt.

All the above steps are repeated for 5 to 8 positions all around the tank circumference depending on the size of the circumference

The minimum number of stations (T1, T2, etc.) per circumference shall be as given in Table 2.



Key
T1 T8 Theodolite stations

Example of theodolite station locations for external procedure based on a reference circumference

Table 2 — Minimum number of theodolite stations for external procedures

Tank circumference (m)	Minimum number of stations
up to 50	5
above 50, up to 100	6
above 100, up to 150	8

TANK CALIBRATION PROCEDURE (ORLM)

Tank Calibration is the process of determining the Volumetric Content of a tank per unit height of liquid.

Calibration standards

API MPMS 2.2 A (ISO 7507-1) Calibration of Vertical Cylindrical Tanks – : Strapping Method.

API MPMS 2.2 B (ISO 7507-2) Calibration of Vertical Cylindrical Tanks – : Optical Reference Line Method.

ISO 7507-1 Strapping Method

First on site reference circumferential strapping is done only on 1st and 2nd Shell with calibrated strapping tapes and dynamometer with a proper tension and repeated 3 times and a mean value taken. This circumference is taken roughly at apposition of one-fourth from upper or lower weld of the strake. A circumference measure at 1st or lower 2nd course is chosen because there is minimum distortion or loss of circularity at this position because the strake is welded to the annular bottom plates. An external diameter (and radius) is calculated from this circumference after applying necessary correction like temperature, step over (vertical weld). We call this reference radius or diameter. Other than this plate thickness measure with ultrasonic thickness gauge, dip reference height measures, tank and course height is taken. These are done ISO 7507-1 (same as IS 2007 or API MPMS 2.2A)

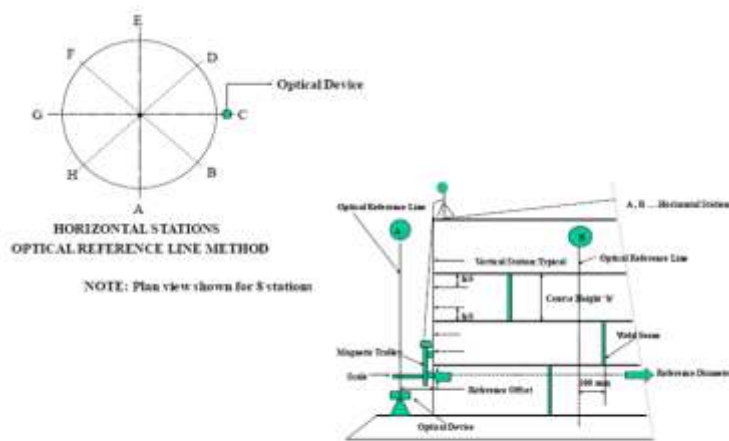
Optical Reference Line Method (ORLM)

- ◆ Reference Standard: API Chapter 2.2B
- ◆ This method establishes diameters of the courses by optical method
- ◆ The method can be applied internally or externally (external easier) Procedure (Figure)
- ◆ Tank divided into horizontal and vertical stations
 - Number of stations horizontally vary from 8 to 36 depending on diameter
- ◆ Magnetic trolley with graduated scale moved vertically
- ◆ Reference circumference of bottom course by manual method (API Chapter 2.2A)
- ◆ Reference offset is measured optically at the same height where the reference circumference is measured
- ◆ At each horizontal station, course offsets are measured (Two per course) optically
- ◆ Deviations in course offsets from the reference offset are averaged for each course
 - Using the reference circumference and deviations the course diameters are Established

TANK CALIBRATION PROCEDURE (ORLM)

Optical Reference Line Method (ORLM)

- Important Considerations
 - Optical device stability is critical
 - Device must be in level in all directions
 - The optical ray must be vertical throughout the height of the tank (within limits)
 - At each station reference offset is rechecked b after the full vertical traverse
 - The optical device is checked randomly at three locations for perpendicularity by rotating the device 360 deg
 - In extreme windy condition , when it is difficult to maintain the trolley in contact with the shell, calibration should not undertaken
- Other Measurements
 - Identical to manual method API Chapter 2.2 A
- Development of the Capacity table
 - Per API Chapter 2.2A
- Advantages
 - Much easier, no scaffolding and reference circumference is easier to control being at the base



Optical Reference Line Method (ORLM)

Figure 4

Internal Measurements (for empty tanks)

Datum plate height, deadwood (manhole, pipes, beams, coils, etc.) roof structure, roof leg pin spaces are recorded. Floating roof weight and ladder weight for floating roof tanks are taken from existing reference to calculate volume deduction factors in density correction tables. Bottom calibration up to datum level and subsequently up to flush point is done with water flow meter.

TANK CALIBRATION PROCEDURE (INTERNAL EODR)

Tank Calibration is the process of determining the Volumetric Content of a tank per unit height of liquid.

Calibration standards

API MPMS 2.2 A Calibration of Vertical Cylindrical Tanks – : Strapping Method.
API MPMS 2.2 D Calibration of Vertical Cylindrical Tanks – : Electro Optical Distance Ranging method (EODR)

EODR: Electro optical distance ranging method (Internal) For Empty Tank

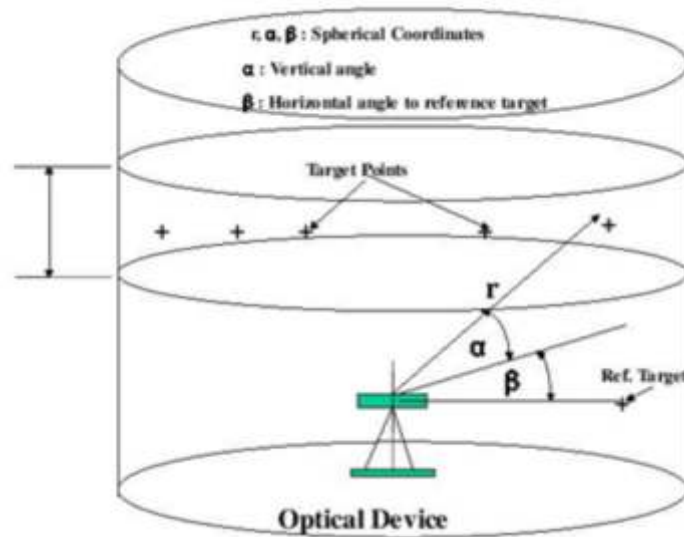
GENERAL

This method is based on the measurement of internal diameter of vertical cylindrical tanks having diameters equal to or greater than 5 meter by means of an electro optical distance ranging (EODR) instrument and subsequent compilation of tank capacity tables.

Reference Standard: API Chapter 2.2 D

- This method is for Internal application only
- Like ORLM and OTM the method establishes diameters of all courses Procedure
- Establish a reference target on the bottom course and note the reference distance and reference angle
- Spherical coordinates are measured using distance ranging device (r, A, B) for each target point
- Tank profile is thus established from bottom to top
- The reference distance of the target and the reference angle of the target at the end are rechecked
- Using standard mathematical procedures, diameter of courses is computed
- With an on line computer, diameters can be determined instantaneously

TANK CALIBRATION PROCEDURE (INTERNAL EODR)



**Electro optical distance ranging method
(EODR)**

Internal Measurements (for empty tanks)

Datum plate height, deadwood (manhole, pipes, beams, coils, etc.) roof structure, roof leg pin spaces are recorded. Floating roof weight and ladder weight for floating roof tanks are taken from existing reference to calculate volume deduction factors in density correction tables. Bottom calibration up to datum level and subsequently up to flush point is done with water flow meter.

TANK CALIBRATION PROCEDURE

HORIZONTAL TANKS AND MOUNDED BULLETS

Tank Calibration is the process of determining the Volumetric Content of a tank per unit height of liquid.

Calibration standards

Measurement Standards: Indian – IS 2009 and 2166, International – API MPMS, ISO 12917

Horizontal Tanks and Mounded Bullets

1. Measurement Standards: Indian – IS 2009 and 2166, International – API MPMS, ISO 12917

2. External measurements of circumference of each course at 2 points 20% from the ends of welds. These points will be marked with crayon/chalk before measurements. Each tank comprises of multiple courses and a mean circumference will be derived from the measurements. Circumference will be taken with Steel tapes at a tension of < 5 kg.

3. When accessed internally, laser beam measurements are used inside to determine vertical and horizontal diameters with laser distance meters or laser total stations.

4. Length of each course will be added translating into tank length. This length will also be measured externally with a laser distance meter by aligning the instrument at one end and holding a vertical plate aligned to the other end, which will give tank external length. Internal length will be derived after deducting plate thickness at both ends.

5. Ultrasonic plate thickness measurement with digital meters will be taken at positions around the marked circumference line and a mean thickness of each course will be obtained. Thickness of end plates will also be taken. This thickness will be used to arrive at internal diameter from external measurements. A general thickness report will be provided in addition to tank tables.

6. Tank outer mean vertical diameter and horizontal mean diameter measurements will be done with laser distance meter with maximum length reported from the meter. This will be done at both ends of the tanks. A vertical plumb line and a horizontal axis will be drawn as a reference line prior to measurements.

TANK CALIBRATION PROCEDURE

HORIZONTAL TANKS AND MOUNDED BULLETS

7. Dip reference height and distance of the point from the tank ends on top of tank will be measured.

8. Tank inclination / slope is an important factor in horizontal tanks. We use automatic laser levels with visible laser beams which clearly mark out the horizontal and vertical line inside the tank. For tanks which cannot be accessed inside, the instrument will be placed on top of the tank on one end on a tripod/ solid elevated base. The instrument will give out a laser beam which is crosshair type in both horizontal and vertical directions. Vertical depth measurement from this laser line to the top of the tank will be carried out from one end to another end. The vertical rise at another end will provide the inclination of the tank with respect to the horizontal. This value will be the maximum vertical rise of the tank at the end opposite to outlet. When the tank is accessible inside, the vertical rise at one end is similarly taken inside the tank. Also, the vertical distance from laser level to datum plate/ point is recorded.

9. Some horizontal tanks have ends which are not flat – they can be bulged, dished, truncated cone, hemi-spherical or tori spherical. It is important measure the profile of both the ends. For external measurements, a vertical plumb will be dropped from the tank side at middle position of the tank and a horizontal measurement recorded near the base from the weld (tan line). This procedure is repeated at both ends. The knuckle radius is measured for tori spherical ends and end diameter measured for truncated cones. For internal measurements, a vertical plumb line is created at the tan line and the maximum offset is measured at the centre position with laser distance gauge.

10. Calculations are done as per BIS 2166 (Basic Indian method), API MOMS 2.2 E, ISO 12917 (Complete International method). Temperature correction, thickness correction, liquid head stress correction is applied on volumes analyzed and processed on custom made formulations. These volumes in our tables will have a uniform exponential curve as opposed to intermittent linear progression when calculations are done manually with water filling at fixed intervals/ volumes. Very complex mathematical formulations are used to arrive at volumes for inclined horizontal tanks. Softcopy are also provided in Excel or pdf file.

Tank Calibration is the process of determining the Volumetric Content of a tank per unit height of liquid.

TANK CALIBRATION PROCEDURE

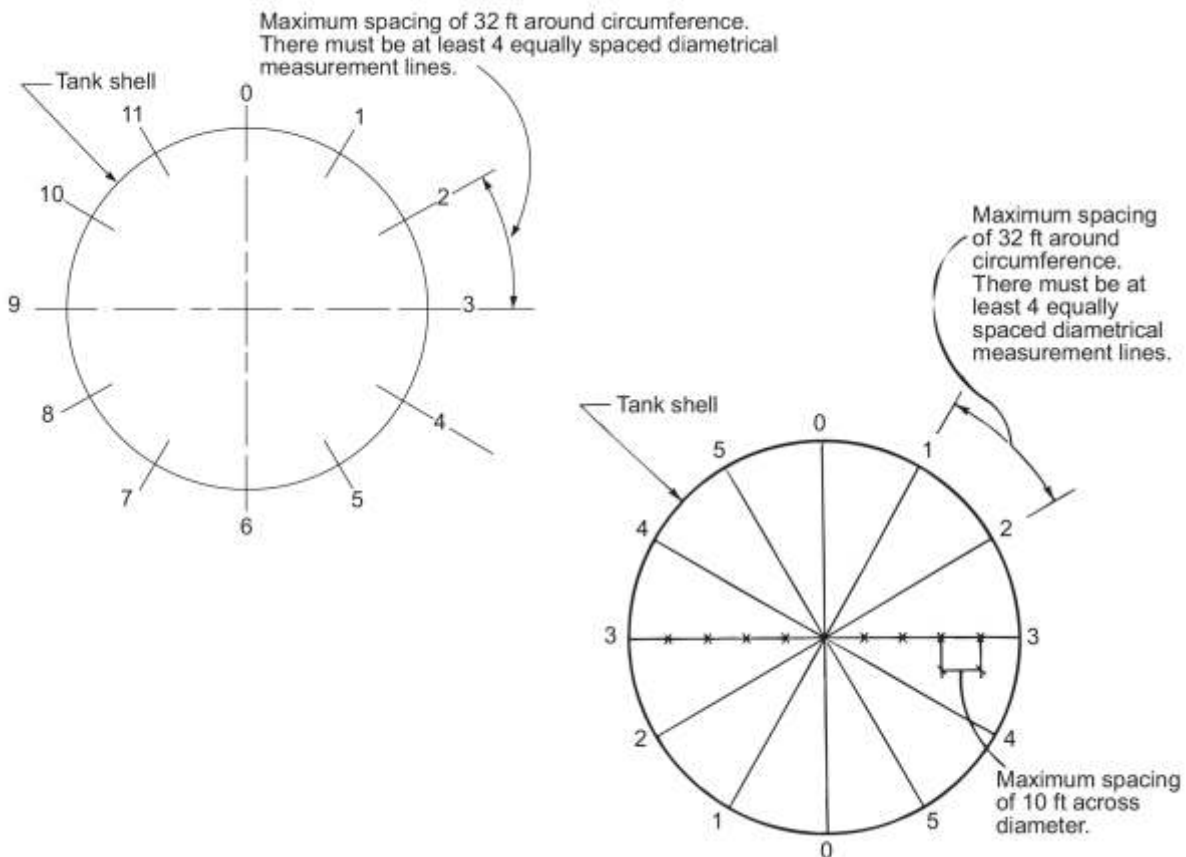
BOTTOM CALIBRATION

Tank bottom shall be calibration by the liquid method or by use of the laser measuring device or by use of surveyors level or water filled tubes. The choice of method shall be decided by the calibration, taking into account the facilities available at the site during calibration.

Laser Method

Similar number of horizontal stations marked inside the tank at equal distance around the circumference.

Vertical stations are taken from the center of the tank to the inside of the wall, 5M apart with the first station at 0.5M from the wall. By placing a leveling staff at the center of the tank and taking reading with horizontal optical plummet at each vertical station, the profile of the tank bottom can be obtained. From this profile the volume can be calculated using the correct formula for the geometrical shape for the floor with irregular configuration. If the tank is in operations and cannot be emptied out, the Zero Quantity is to be taken from the previous calibration chart.



TANK INSPECTION

INTERNAL TANK INSPECTION

1.0 Visual Inspection on Tank Supports, conduits and assemblies

- a. Carry out visual inspection on bottom plate, support structures, foundation, floor to shell weld internal, pressure valves, Nozzles and all applicable apparatus.
- b. Photographs to be taken for findings recorded in the report.

2.0 Tank Settlement Survey & Calibration

- a. To find the centre of tank by using survey equipment and fix the total station.
- b. Make sure hard barricade has to be placed around the station to avoid lost of station level.
- c. Perform Out of Roundness, Verticality & shell Settlement respectively.
- d. Perform profile survey and calibration once initial survey is completed.

3.0 Tank Bottom plate Thickness Gauging

- a. Surface cleaning /preparation as per the standard procedure.
- b. Five location in each section has to perform UTG in Bottom Plate.

4.0 Magnetic Particle Inspection/Eddy Current Inspection on weld joint of shell to annular plate

- a. Surface cleaning /preparation as per the standard procedure.
- b. Perform Magnetic Particle inspection /ECI on weld joint of shell to annular plate.

EXTERNAL TANK INSPECTION

5.0 Ultrasonic Thickness Gauging on shell (As per external inspection)

- a. Carry out visual inspection on bottom plate, support structures, foundation, floor to shell weld internal, pressure valves, Nozzles and all applicable apparatus.
- b. Photographs to be taken for findings recorded in the report.

6.0 Tank Roof Plate Thickness Gauging

- a. Surface cleaning /preparation as per the standard procedure.
- b. Five location in each section has to perform UTG in Bottom Plate

7.0 Visual Inspection on Tank Supports, conduits and assemblies

- a. Carry out visual inspection on top plate, support floor to shell weld external, roof structure, pressure valves, Nozzles and all applicable apparatus.
- b. Photographs to be taken for findings recorded in the report

OUR ESTEEMED CLIENTS



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A photograph of two business people shaking hands, symbolizing a deal or agreement. The image is dark and occupies the bottom half of the page. A large orange triangle is in the bottom right corner.

Thank you...