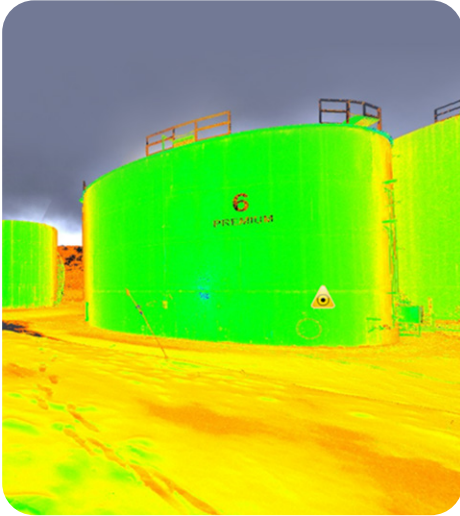




# Laser Scanning Services

FAST, ACCURATE, COST-EFFECTIVE  
TANK EVALUATION



## WHY LASER SCANNING?

- Laser Scanning offers an excellent method for assessing many of the factors required for an API 653 **internal** or **external** inspection
- Using laser scanning technology, API 653 inspectors are able to complete their inspections more quickly and more accurately
- Laser scanning collects millions of data points. The high quality data provides a much greater range of reporting options, including impressive visual presentations and rich data sets for doing advanced analysis such as FEA.

## ACCURACY

### Long range laser

- Accuracy +/- 0.7 mm or 0.0027 in at 15 m
- Max Range 120 m

### Short range laser

- Accuracy +/- 0.05 mm or 0.002 in
- Max Range 0.3 m or 12 in

## Laser Scanning Is Very Effective for API 653 Inspections

- Collects more data
- Faster
- More accurate
- Verifiable, repeatable, reliable results
- More analysis and reporting options
- Visual results
- Export data to other applications – Excel, Auto Desk, Solid Works
- Ability for analysis of asset after it has been put back in service

## Laser Scanning Addresses Common Tank Concerns

- Corrosion
- Edge settlement
- Shell deviations
- Damage monitoring
- Secondary containment volume
- Planar tilt
- Ovality
- Bulges
- Dents



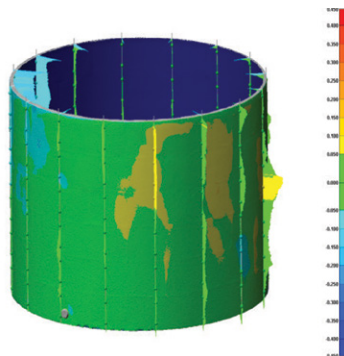
**A HIGHER LEVEL  
OF RELIABILITY®**

# Laser Data Outputs

## VERTICAL DEVIATION PROFILES

Vertical deviation profiles can be presented visually, extracted at very fine intervals and exported to Excel for further assessment. Different colors highlight the deviations, clearly indicating problem areas. Sections can be exported quickly, providing answers in 15 – 30 minutes.

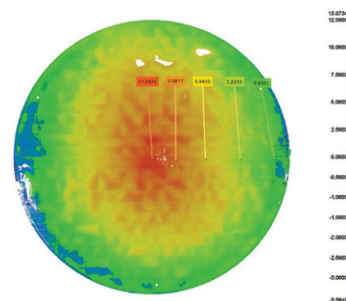
*Significant vertical deviations are generally indicative of abnormal operating conditions. Using the laser allows quick and finite determination of the extent of the deviations.*



## FLOOR DEVIATIONS & EDGE SETTLEMENT

Laser scanning provides settlement measurements and a visual representation of floor deviations in the tank bottom. Additional sketches show the layout of measurement points. Deviations and edge settlement are presented via charts and sketches.

*The laser scan of this tank floor shows a limited amount of edge settlement as highlighted in blue.*



## STRAPPING TABLES

A strapping table demonstrates the volume of fluid in a tank at a given height. The laser takes into account that no tank is perfectly round and/or concentric and provides precise volumetric measurements of volume at a specific height. Red text indicates critical zones.

FT.	BARRELS	FT.	BARRELS	FT.	BARRELS	FT.	BARRELS
0	7.65	4	9559.73	8	19040.08	12	29075.49
1	51.71	1	9768.8	1	19249.15	1	29284.58
2	137.62	2	9977.87	2	19458.22	2	29493.67
3	261.34	3	10186.94	3	19667.29	3	29702.76
4	414.35	4	10396	4	19876.37	4	29911.85
5	591.14	5	10605.05	5	20085.44	5	30120.94
6	785.54	6	10814.1	6	20294.51	6	30330.03
7	989.8	7	11023.13	7	20503.59	7	30539.12
8	1198.37	8	11232.16	8	20712.66	8	30748.22
9	1407.3	9	11441.18	9	20921.74	9	30957.31
10	1616.26	10	11650.2	10	21130.82	10	31166.41
11	1825.22	11	11859.23	11	21339.9	11	31375.51
1	2034.15	5	12068.26	9	21548.98	13	31584.61

## FEA ANALYSIS ON TANKS

FEA analysis using laser data can precisely model tank bulges and accurately predict fit for service life cycle.

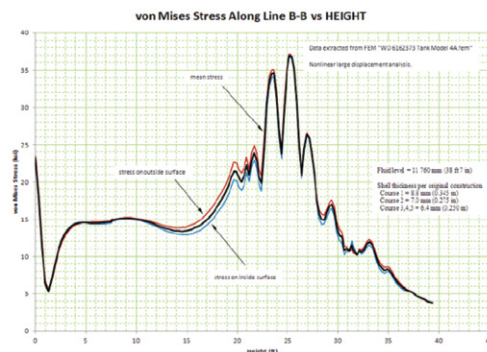


Figure 11 von Mises Stress Along Line B-B



CONTACT OUR LASER SCANNING EXPERTS TODAY

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BEYOND INSPECTION