

# PIPELINE GEOMETRY INSPECTION

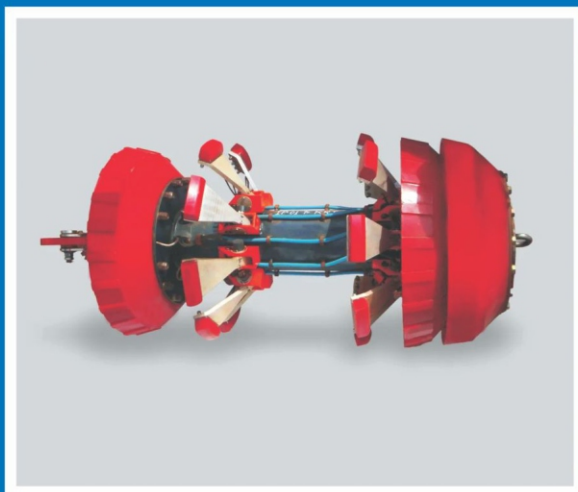


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*technologies*

# PIPELINE GEOMETRY INSPECTION

- Geometry anomalies such as dents, twists, buckles, ovality, and wrinkles in pipelines can significantly impact their safe operation. They can restrict the flow of transported media and induce spot-like formations of sedimentation, turbulence, erosion, corrosion, and hydrate. These anomalies can occur during pipeline coating, transportation, storage, and laying of new constructions. During operations, baseline geometry defects on onshore lines can be caused by landslides, earth tremors, and nearby construction. In subsea lines, shifting currents, floods, and tides can move the pipelines from their original position.
- Graffin Technologies has developed two pipeline electronic geometry inspection tools, Pipelines Electronic Geometry (PEG) and O'clock Wise Pipelines Electronic Geometry (O'PEG), which are used to locate and measure geometric deviations of pipelines. PEG is utilized during the commissioning process for new construction to provide baseline data of geometry and to locate and correct any anomalies present during construction. Subsequent regular runs in commissioned lines check the geometric integrity of the pipeline.
- The mechanical fingers of PEG/O'PEG scan the entire circumference of the pipeline, and the measured data is stored on on-board solid-state memory. Twin odometer wheels, equipped with on-board distance correction for compensating for wheel slippage, are used for measuring the accurate linear distance. An industrial standard microcomputer is used for continuous data acquisition.
- After the run, the data is downloaded and available for immediate analysis. The basic data delivered by PEG/O'PEG includes changes in internal pipe diameter, odometer information, marker information (if used), and velocity. Final reports are provided as hardcopies or CDs.





# SPECIFICATION

SINGLE SENSOR PEG TOOL SPECIFICATION	
Sizes Available	6" to 48" Inches
Minimum Bend Radius	3D (1.5 D on request)
Minimum Deformation Level Reported	2% of pipe ID
Odometer Systems	Two odometer wheels
Distance Accuracy	+/-1 m from nearest Girth weld
Additional Location Information	above ground markers
Maximum Operating Pressure	100 bar
Operating Temperature Range	0-70 degree

MULTI SENSOR O'PEG TOOLS SPECIFICATIONS	
Tool Sizes Available	6" to 48" Inches
No. And Type Of Cups	2/3 Polyurethane cups
Tool Main Body	Carbon Steel
Type Of Deformation Sensors	Low mass, behind the cup Sensor arms
Data Storage	Solid state flash memory
No. Of Odometer Wheels	2 Nos
Axial Accuracy	+/-1 mtr from the nearest pipeline feature i.e. girth weld, change in wall thickness etc.
Sizing Accuracy	+/- 1% of ID.
Radial (O'clock) Accuracy	+/- 10 degree
Minimum Of Pipe ID The Tool Can Pass	15% Reduction in Pipe ID
Minimum Deformation Level Recorded (Depth Of Dent)	2% of Pipe ID
Bend Radius Tool Can Negotiate	3D (1.5 D on request)
Maximum Speed	4.8 mtrs/sec
Maximum Operating Pressure	100 Bar
Operating Temperature Range	0-70 degree

## ADVANTAGES OF ELECTRONIC GEOMETRY SURVEY/ CALIPER SURVEY

- Provides base line data regarding pipelines internal geometry.
- All anomalies & defects above 2% of diameter are registered irrespective of the wall thickness with location.
- Partially Closed valves, buckles, tap coupons are detected with location.
- Excess penetration & Miter joints are detected, with location.
- Ensures compliance to ASME sec B 31.8 regarding detection of dents, gauges and other anomalies.
- Provides geometrical data for use of pigs which are extremely limited in the amount of line reduction or bend radius they can pass without damage to the tool or the pipeline.
- Provide cross reference data for future corrosion loss pigging data.
- Cost effective as compared to manual inspection detection of anomalies using gauge pigs.
- O'PEG provides radial (O'clock) position.

## DISADVANTAGES OF ELECTRONIC GEOMETRY SURVEY/ CALIPER SURVEY

- Metal loss is not detected.
- Internal Debris such as welding rods, gravel etc. can be interpreted as dents / defects if not cleaned prior to caliper survey.



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