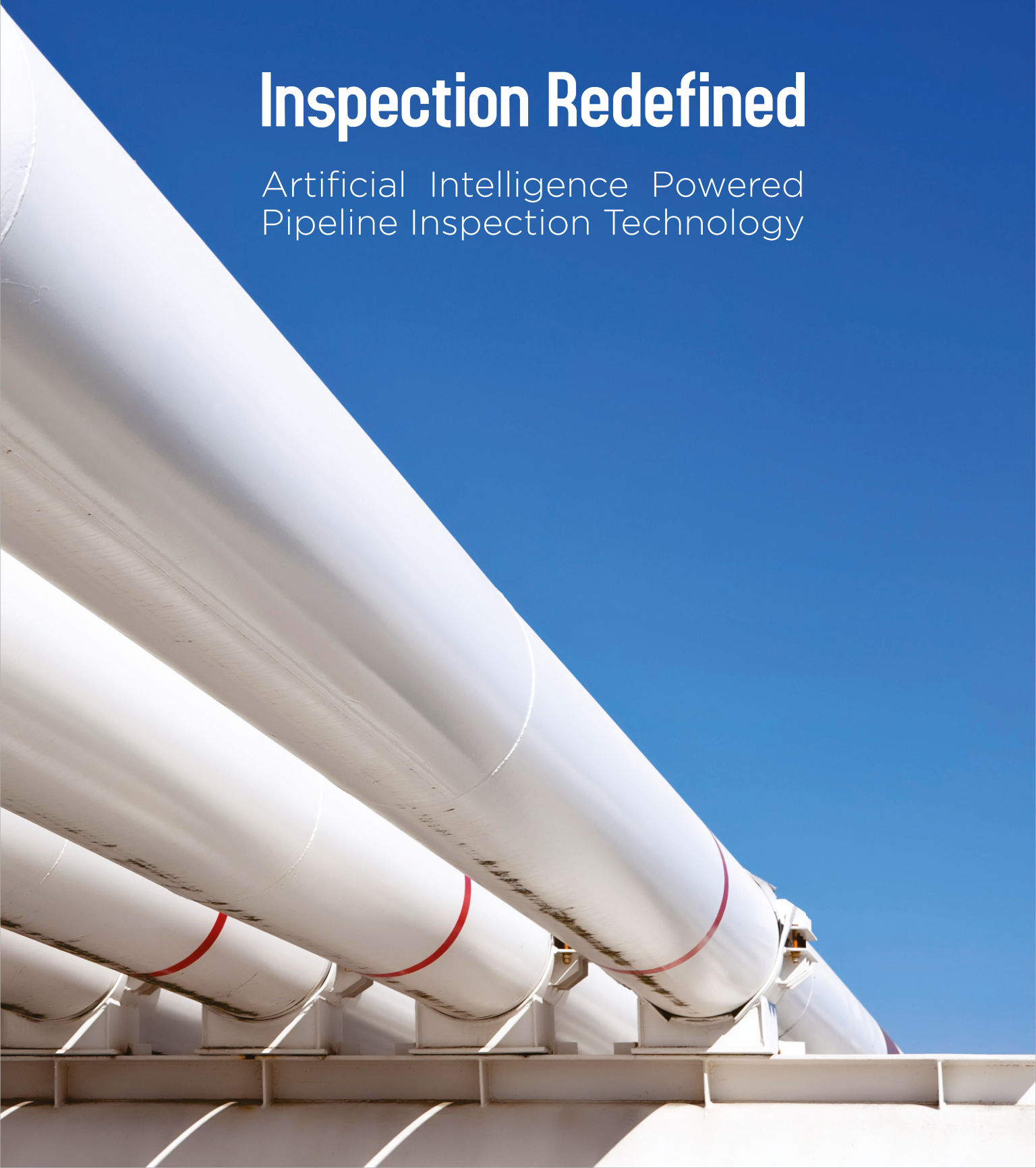


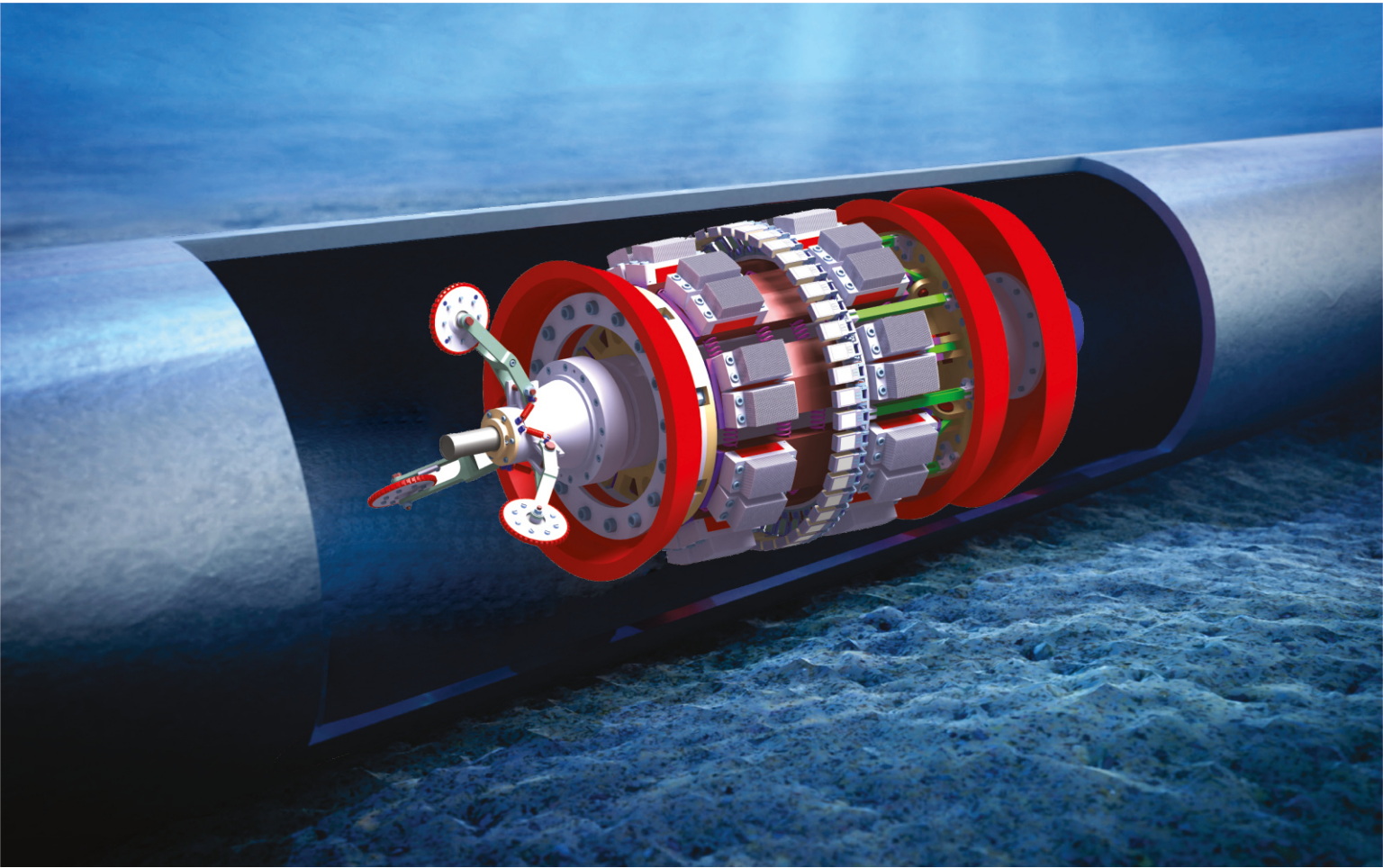


Inspection Redefined

Artificial Intelligence Powered
Pipeline Inspection Technology



Why Kinben Innovation?



KINBEN's state-of-the-art pipeline inspection technology stands out as best-in-class with its cutting-edge features: -

- High-Resolution **KinSense™** tools
- Reliable metal loss detection & classification
- Capability to inspect internal & external pipe surfaces
- Specifications complying with POF requirements
- **KinSoft™** software system employs Artificial Intelligence to drive advanced integrity assessment
- User friendly interactive reporting software
- Support for Pipeline Open Data Standard (PODS)

Smaller Corrosion Sites

Detecting and identifying smaller corrosion sites for proactive maintenance

Risk Assessment

Artificial Intelligence powered deeper insights into pipeline integrity

Plan Future Inspections

Pragmatic inspection plans made possible by intelligent risk assessment

Choose KINBEN for a reliable and efficient pipeline inspection solution.

KinSense™

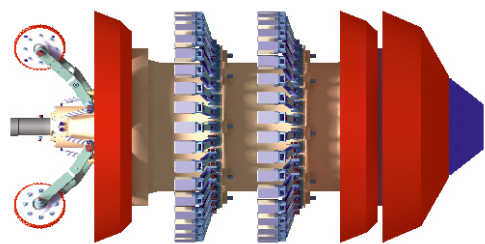
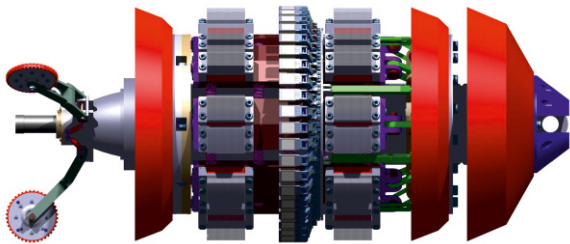
Our Flagship ILI Technology

KinSense™ MFL

Advanced detection and classification of defects in gas and liquid pipelines.
High-Resolution defect sensing array for accurate metal loss and corrosion defect sizing and boundary delimitation.

KinSense™ Caliper

High-Resolution geometry measurement of gas and liquid pipelines.
Accurate geometry recording of pipeline dents, ovalities and misalignments.



- High-Resolution tri-axial MFL sensors for a comprehensive scanning of the pipe surface.
- Defect sensing in compliance with API and POF requirements.
- High-Resolution Inertial Measurement Unit for accurate GPS coordinates of pipeline features.
- Best-in-class geometry measurement resolution.
- CE & ATEX certified tools.
- Advanced data acquisition and recording capability.
- Tool sizes from 4" to 56" diameter.
- Custom design tools to meet challenging inspection requirements.

Solutions Offered

- High quality pipeline corrosion detection and geometry assessment services.
- Multi-inspection technologies in a single inspection run.
- Inspection of high flow, high pressure and offshore pipelines.
- Maintenance services including pipeline cleaning and gauging.
- API 1163 certified inspection and maintenance operation.
- AI powered advanced data analytics for ILI evaluation.
- XYZ profiling of pipelines.
- Corrosion growth analysis and Fitness-for-Purpose (FFP) services.

Designed and Developed in U.K. | Manufactured in India



Technical Specifications

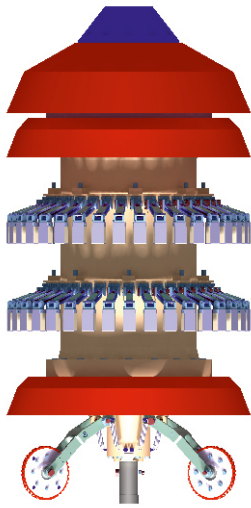
KinSense™ Caliper

KINSENSE EGP SERVICE

HIGH-RESOLUTION PIPELINE GEOMETRY MEASUREMENT

TECHNICAL SPECIFICATIONS

KinSense™ Caliper measures changes in internal diameter, dents & ovalities.



Feature Name	Accuracy			
	Depth	Length	Width	Orientation
Dents	±1.0%	±20mm	±50mm	±10°
Ovality	1.0%	±20mm	±10°	
Detection Threshold	ID Changes 1.0mm	Ovality 1.0%	Dents 1.0% OD	

Pipe Bends	Bend Radius	Bend Angle	Bend Orientation
Accuracy*	±10%**	±5°	±5° (w.r.t. pipe axis)

*Accuracy-Certainty Level 80%
**Detection Threshold upto 30D

Pig Passage Capability

KinSense™ Caliper can pass through a bore restriction of upto 25% of pipe diameter.

KinSense™ Caliper Features

- Industry Leading Sensor Density
- Tool speed upto 3 m/s
- Tailored solutions available upon request

Disclaimer

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Technical Specifications

KinSense™ MFL

KINSENSE MFL-A SERVICE
IN-LINE HIGH-RESOLUTION METAL LOSS DETECTION AND SIZING

TECHNICAL SPECIFICATIONS

Operational Specifications KinSense™ MFL Standard Operating Specifications

Tool sizes	4" - 56"
Pipeline Product	Gas or liquids
Product Temperature Range	0 °C - 60 °C
Maximum Operating Pressure	1500 PSI
Optional Operating Pressure	2500 PSI
Tool Speed Range	Up to 3.0 m/s (max)
Product Flow Range	Up to 10 m/s (max)
Minimum Pipeline Bend Radius	1.5D, 90°
Mitered bend	1.5D, 90°
Wall thickness range	4 - 25 mm
Wall thickness measurement*	± 1mm or 0.1t whichever is higher
Maximum operating time	200 Hours
Maximum inspection length	500KM

Location and Orientation Capabilities

Axial position accuracy from reference marker

Distance between two consecutive markers	1:1000
Axial position from closest weld	± 0.1 m
Circumferential position accuracy	± 5°

Performance Specifications KinSense™ MFL

	General Metal Loss	Pitting	Axial Grooving	Circumf. Grooving	Circumf. Slotting
Depth at POD = 95 %	0.100t	0.100t	0.100t	0.100t	0.100t
Depth sizing accuracy at 90 % certainty	± 0.10t	± 0.10t	± 0.15t	± 0.10t	± 0.10t
Width sizing accuracy at 90 % certainty	± 15 mm	± 15 mm	± 15 mm	± 15 mm	± 15 mm
Length sizing accuracy at 90 % certainty	± 10 mm	± 10 mm	± 15 mm	± 10 mm	± 10 mm

Disclaimer

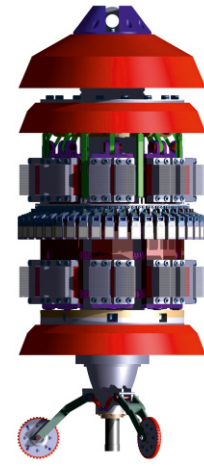
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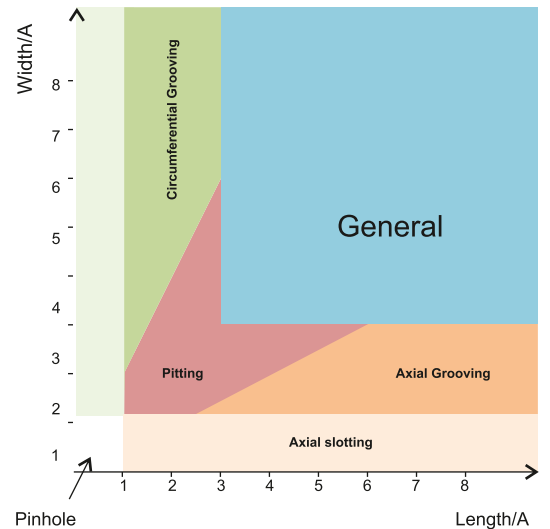
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Metal Loss Feature Classification

Metal loss features classified according to the Pipeline Operators' Forum specification graph.

A = wall thickness or 10 mm(0.39"), whichever value is greater



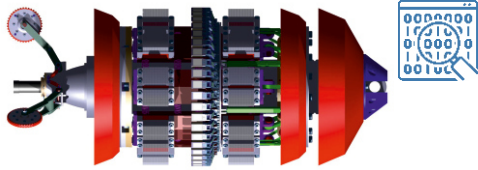
Wall Thickness Detection

±1 mm or ±0.1t, whichever value is greater at 80% certainty
t = wall thickness

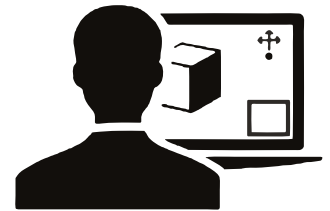
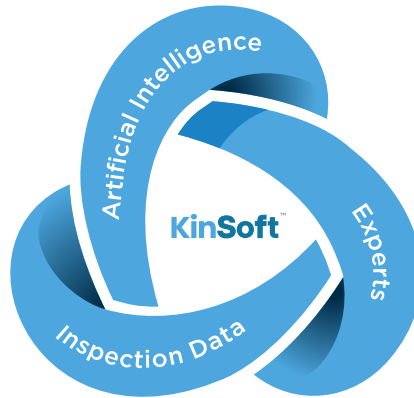
KinSoft™

AI Powered ILI Data Analytics Software

For efficient scanning of raw inspection data, improved identification and classification of smaller corrosion sites, better corrosion growth analytics and forecasting.



**Inspection
Run**



**Inspection
Reports**

Efficient scanning of raw inspection data

Improved identification and classification of smaller corrosion sites

Better corrosion growth analytics and forecasting

Our AI powered ILI data analytics tool provides high accuracy for defect detection and classification

Inspection Data

Our high-resolution inspection technology enable detection of wide range of defect types.

The raw inspection data is analyzed using our advanced software system for defect detection, identification and sizing for industry leading accuracy.

Artificial Intelligence

Empowers data analysts with automated signature detection of even the smallest defects.

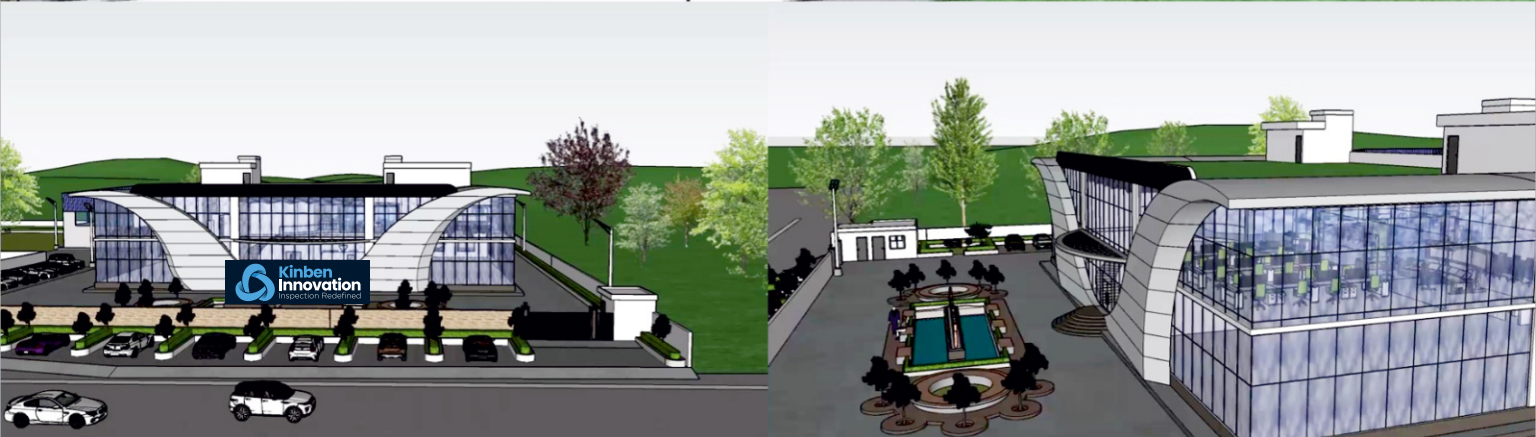
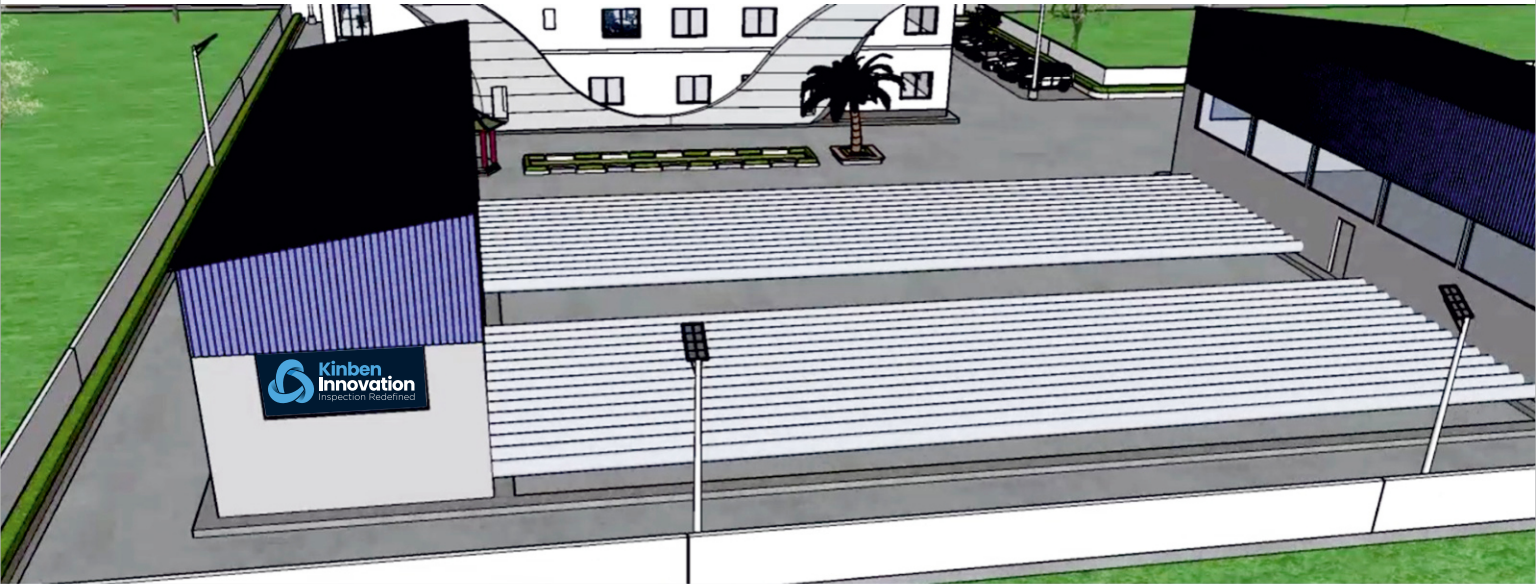
Enables faster and accurate defect detection and Characterization.

Experts

ASNT certified experts scan the data to create the inspection report.

Our experts have a combined experience of more than 100 years of analyzing inspection data.

Kinben Technology Centre



State of the art Inspection Technology Centre

Design & Engineering

- High precision design, engineering, fabrication and assembly.
- Customized design, engineering and fabrication for client-specific and challenging inspection requirements.
- Electronics, mechanical and data labs.
- Large warehouse and offices.

Testing & Validation

- Pull through test inspection facility for pipeline sizes ranging from 4" to 56".
- Fabricated metal loss defects of different sizes and orientations for performance evaluation of inspection tools.
- Factory Acceptance Test (FAT) as per specific requirements of the client.
- Hydrotest Facility.
- Test loop for non-piggable pipelines.
- Tool speeds up-to 5 m/s using state-of-the-art speedcontrol machine.

Training

- Integrity assessment of pipelines - ECDA, SCCDA, ICDA.
- In-line Inspection using different technologies.
- Coating and Cathodic Protection of Pipeline Network.
- AC / DC Interference.
- Microbial Induced Corrosion.
- Corrosion due to blended fuels.



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