Spectrum NDT

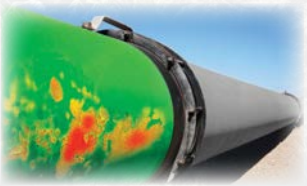
Reduce Costly Pipeline Failures with Spectrum 3D Optical Scanning

Spectrum Laser Scanning with Handyscan and Pipecheck

Using triangulation and binocular vision, the Handyscan 3D scanner can self-position itself to a unique dynamic referencing system on the pipeline, which ensures high measurement repeatability and accuracy. The resulting 3D scan allows easy visualization of surface defects.

Advantages of the Handyscan 3D:

- Easily carried on site
- Can be more than 10 times faster than pit gauge techniques
- Self-positioned to the pipe, eliminating encoders and bulky mechanical scanners
- Resulting dynamic link between pipe and scanner preserves accuracy and resolution in any field vibrating environment
- Data quality can be verified in real time. Results are generated in a few minutes.
- Accuracy of within ± 50 microns with repeatability ensured
- Inspector's skill level has no impact on scanning process and analysis
- Follows code regulations (ASME B31G code)



Pipecheck is a data acquisition and analysis platform addressing both pipeline external corrosion and pipeline mechanical damage. It offers very fast and reliable data processing that generates instant, on-site results with numerous key functionalities that increase dent understanding and facilitate decision making.

Key Pipecheck functionalities include:

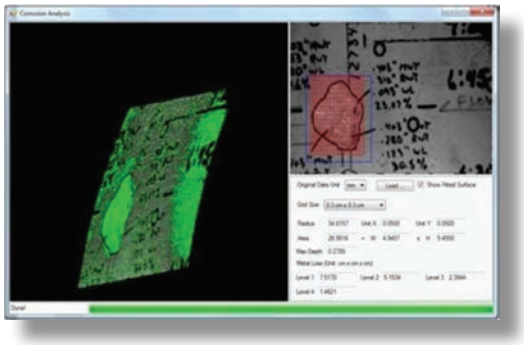
- Automatically-applied interaction rules
- 3D and 2D color mapping with river-bottom path overlay
- 2D section generation in both axes
- Worst-case-profile generated for all corrosion features
- Estimated burst pressure calculation based on ASME B31G code (B31G, B31G Modified and Effective Area methods)
- Corrosion depth measurement, dimensions and position on the pipe
- "Depth-on-the-fly" – simply drag the mouse over point to obtain local corrosion depth measurement
- Gouge and redressed gouge inspection
- Point-to-point distance measurement directly in the 3D model

Spectrum Structured Light Scanning with 3D Toolbox

The 3D Toolbox is composed of a 3D structured light "camera", ruggedized PC controller, software and accessories all in a strong protected case that can be easily transported to any job site worldwide. The 3D Toolbox is one of the best tools in Spectrum's arsenal for nondestructive evaluation of surface "features" (corrosion, defects, dents, etc.).

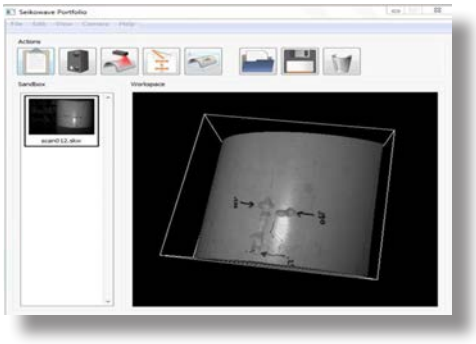
More Accurate Decision Making

The pipeline industry is often challenged in assessing the severity of a particular pipe anomaly (dent, gouge, corrosion pit, etc.) to determine whether or not repair or removal is warranted. In addition, there is also a need for prioritizing in-line-inspection (ILI) data, and for rendering remaining-life assessments of the pipe. Spectrum's 3D Toolbox enables us to quickly and accurately collect repeatable data that can then be used with computational tools such as ASME B31G, Modified ASME B31G, RSTRENG© and API 579/ASME FFS-1.



The many benefits of this technology as noted by PRCI member companies as well as PHMSA, NTSB, NEB include:

- **Repeatability.** The device will capture the same 3D measurements 100% of the time from any angle by any person using the device.
- **Calibration.** The device is calibrated at the factory and is National Institutes of Standards Testing (NIST) traceable. If the device is not calibrated it will not operate.
- **Ease of use.** Used just like any standard 2D camera. No special training required, and images are captured in microseconds.
- **Speed.** The 3D images can be captured in fractions of seconds and stitched together in minutes. Thus a complete corrosion inspection, analysis and final decision can be completed in minutes rather than hours or days.
- **Accuracy.** Equal to or better accuracy than laser technology.



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