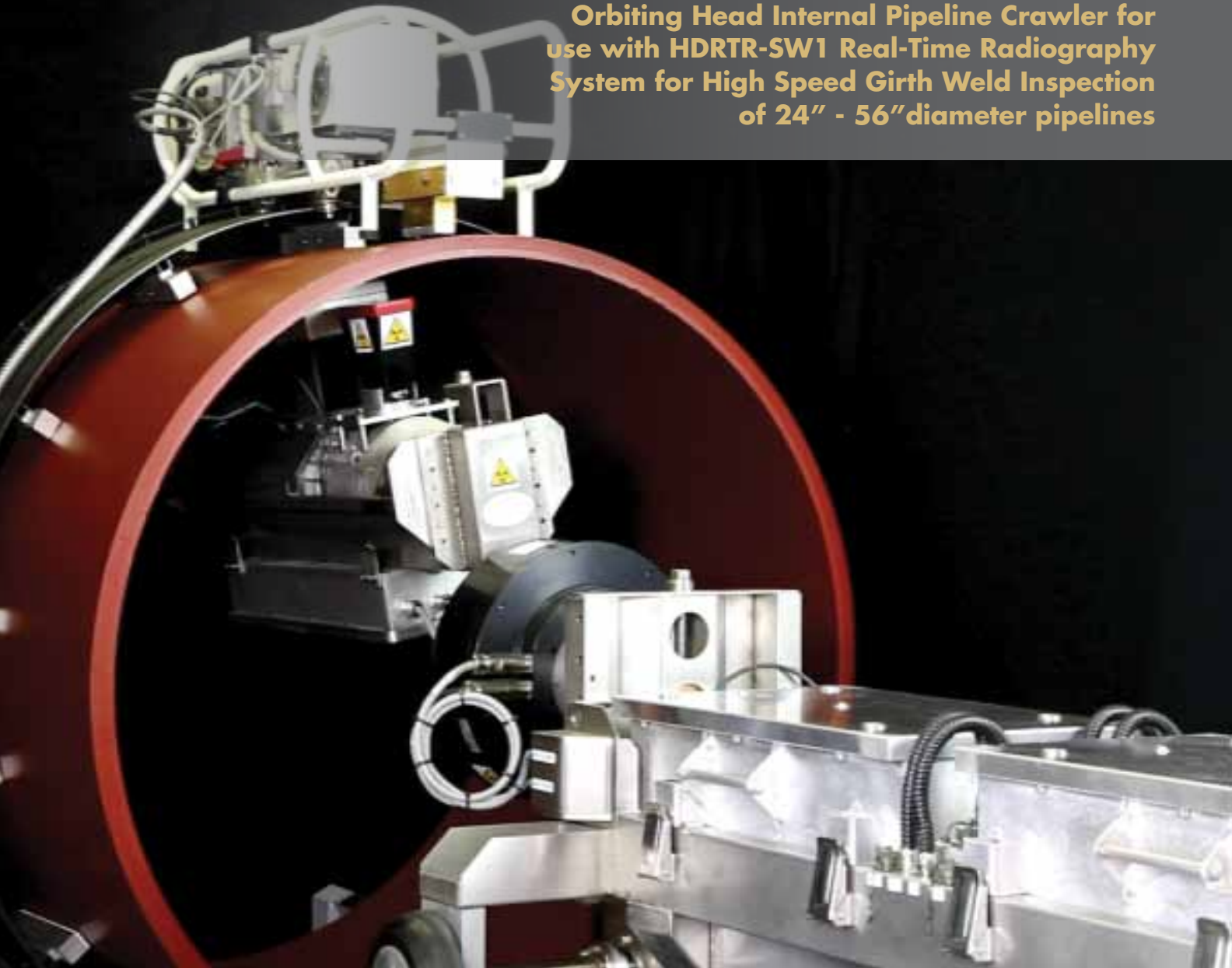


RealTime

It's Time for High Definition RealTime Radiography

Orbiting Head Internal Pipeline Crawler for use with HDRTR-SW1 Real-Time Radiography System for High Speed Girth Weld Inspection of 24" - 56" diameter pipelines



Shaw Pipeline Services

The global leader in non-destructive testing solutions

Orbiting Head Internal Pipeline Crawler for use with HDRTR-SW1 Real-Time Radiography System for High Speed Girth Weld Inspection

Key points

Benefits

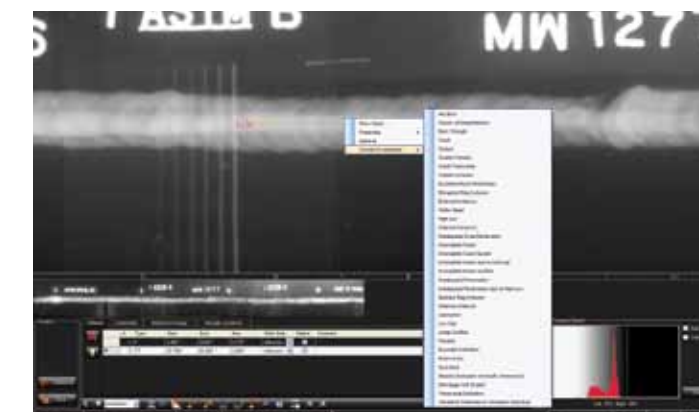
- Inspects pipelines from 24" to 56" as standard. Larger diameters possible
- Scans a 48" pipe girth weld in less than 2 minutes (1" wall thickness)
- Eliminates x-ray film and chemicals
- Reliable alternative to CR plates/scanner
- Fast inspection times due to fixed pipe wall to x-ray source distance
- Increased safety due to use of highly collimated, directional tube head

Features

- 300kV, 900W CP directional x-ray tube for reduced cycle times
- Improved geometrical un-sharpness compared to panoramic x-ray tube technique
- Rotating x-ray head, synchronized to external x-ray detector
- Designed for use with HDRTR-SW1 Real-Time Detection System
- 120V DC, 40 A/Hr LIPO batteries with 2 hour recharge

Typical applications

- Large diameter land lines
- Offshore pipeline lay-barges
- Pipe mills
- Double & triple jointing yards



Chassis

Size/Weight: 2.8 m/661.3 lbs with x-ray tube. 1.9 m/484.9 lbs without x-ray tube
 Pipe range: 24" to 56" by use of wheel spacers & orbiting arm extenders
 Drive speed/climb: 0.3 metres second/25 degrees slope
 Drives: DC Motor/Gearbox with intelligent four wheel motor drives
 Chassis: All stainless steel construction
 Batteries: 120V DC 40AHr LIPO, 1000 cycle life. Dual pack option
 Control: On-board micro-controller
 Crawler Control: Gamma detector box or magnetic signaling

X-ray tube

Type: 300kV Metal Ceramic insert, directional, portable
 Current/Power: 3 mA @ 900W
 Focal Spot: 3 mm x 3 mm maximum size (to EN 12543)
 Exposures/battery pack: Up to 300 minutes (100 x 56" diameter pipe welds, 1" wall thickness welds)
 X-ray tube Rotation: DC Motor/slip ring with digital inclinometer & encoder

Performance

Typical inspection times for better than 2% (source side) wire IQI performance

| Pipe diameter (API) | Weld length (mm) | 1/2" (12.7 mm) wall | | 3/4" (19 mm) wall | | 1" (25.4 mm) wall | | 1 1/4" (32 mm) wall | |
|---------------------|------------------|---------------------|----------------------------|-------------------|----------------------------|-------------------|----------------------------|---------------------|----------------------------|
| | | Scan speed mm/sec | Scan time ¹ (s) | Scan speed mm/sec | Scan time ¹ (s) | Scan speed mm/sec | Scan time ¹ (s) | Scan speed mm/sec | Scan time ¹ (s) |
| 24" | 1,923 | 30 | 94 | 38 | 81 | 46 | 72 | 30 | 94 |
| 30" | 2,404 | 30 | 110 | 38 | 93 | 46 | 82 | 30 | 110 |
| 36" | 2,884 | 30 | 126 | 38 | 106 | 46 | 93 | 30 | 126 |
| 42" | 3,365 | 30 | 142 | 38 | 119 | 46 | 103 | 30 | 142 |
| 48" | 3,846 | 30 | 158 | 38 | 131 | 46 | 114 | 30 | 158 |
| 56" | 4,487 | 30 | 180 | 38 | 148 | 46 | 128 | 30 | 180 |

Note¹ Time includes 30 seconds for x-ray initialization and HDRTR detector auto-align system



OHPC 24/56: View of 300kV Orbiting Tube Head

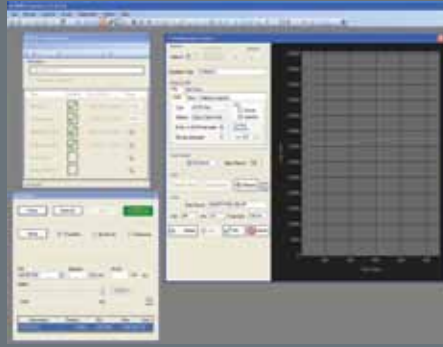
Software features

- Secure log-on with multi-level access
- Easy to use radiographic procedure setup and start scan wizards
- Auto-starts HDRTR detector scanning upon x-ray detection
- Displays weld radiograph in real-time as image is captured by detector system with electronic position ruler
- X-ray signal monitoring during scan
- Interpretation may commence during scanning reducing overall cycle time

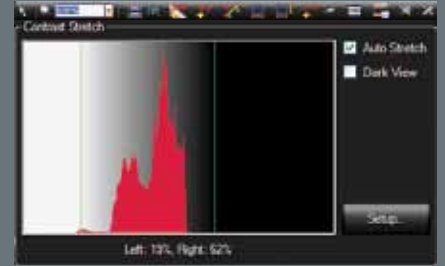
Interpretation tools:

- Auto-contrast enhancement
- Zoom and scroll
- Linear measurement
- Circular measurement
- Area measurement
- Normalized signal-to-noise ratio
- Hot-spot area contrast enhancement
- Overlay shutters
- Image region saving

Image Acquisition, Display, Interpretation, Reporting & Database/Archive Software



Procedure setup



Operator's interpretation "toolkit"



Tool setup



Defect reporting



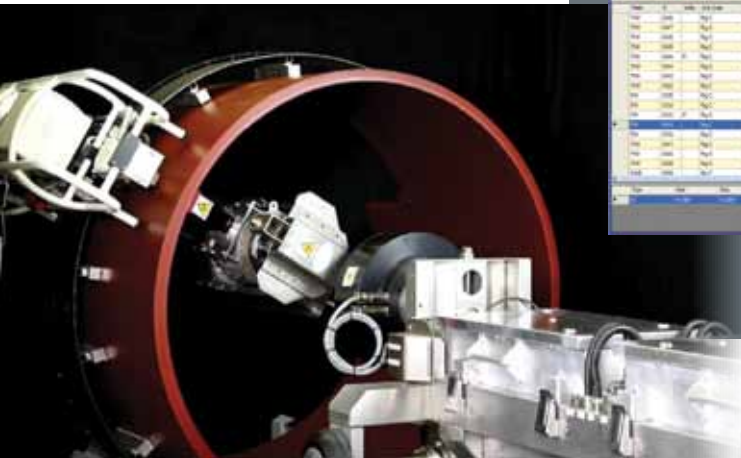
Auto projection



Inspection view



HDRTR inspection report



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