

RealTime

It's Time for High Definition RealTime Radiography

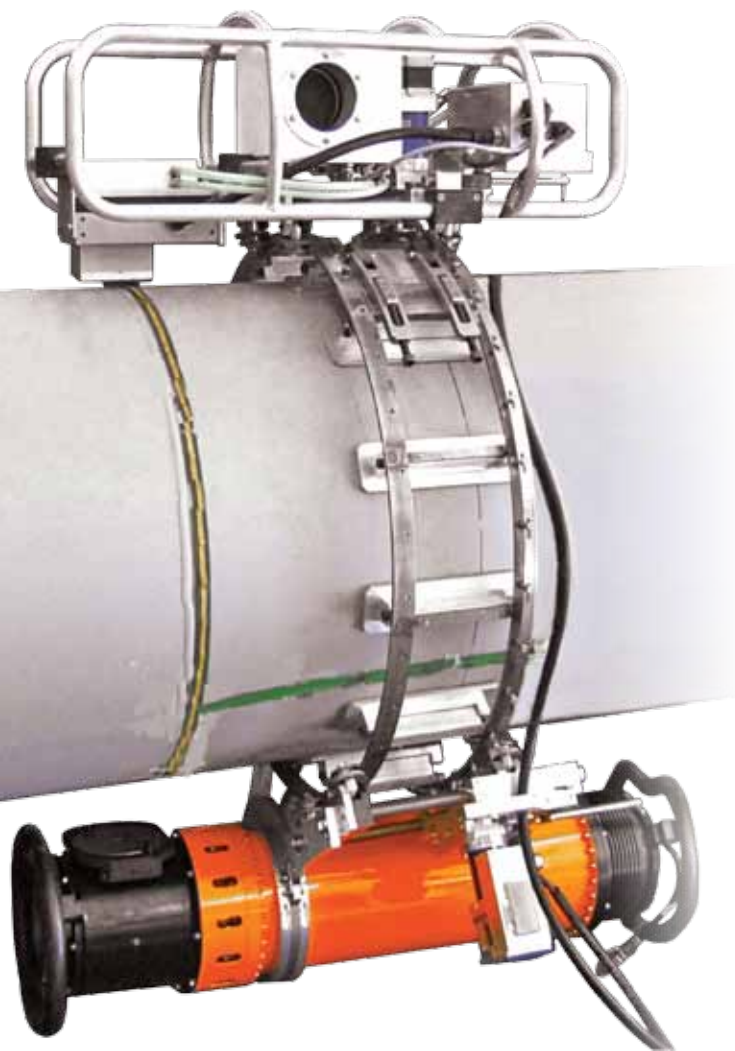
**Fully-External Digital Real-Time Radiography System
for Pipeline Girth Welds for 14" - 36" diameter pipelines**



Shaw Pipeline Services

The global leader in non-destructive testing solutions

Fully-External Digital Real-Time Radiography System for Pipeline Girth Welds for 14" - 36"¹ diameter pipelines



Key points

Benefits

- Increases productivity by reducing inspection times by 50% or more
- Eliminates the use of x-ray film, film chemistry and darkroom
- Eliminates the use of Isotope Sources and multiple exposures
- Instantaneous, Real-Time x-ray results, displayed as a single "strip" for ease of interpretation
- Digital archive/storage & database
- Image interpretation tools and report generation, linked to weld database
- Decreases barrier distances for increased personnel safety

Features

- High resolution and high contrast detection head with better than 50 µm resolution
- Sealed to IP65, cooled and rated for use in 40°C ambient temperature
- Constant potential 300kV or 200kV directional CP Source, highly collimated for increased safety
- Single deployment band for both x-ray source and detection system 2 x lightweight umbilical cables
- Rugged laptop computer for acquisition, viewing, interpretation and database archive
- Small, lightweight control units
- 110V AC operation from small, portable generator

Typical applications

- Tie-In Welds (landlines & offshore)
- Pipe Spool Yards
- Piggy back lines
- In-Service Inspection (gas only)
- Pipe welds where an internal radiation source is difficult to deploy



Scanning buggy and band

Detector/source drives: extra-wide Shaw buggies with quick release mechanism

Drive method: stepper motor/controller – 3 to 33 mm/s speed

Detector bug cooling: on-board liquid cooling for electronics and detector

Drive band: custom bands from 14" to 36"¹ with precision laser cut rack

Detection system

Type: SIS HDRTR-1

Inspection width: 70 mm

Detector resolution: better than 50 µm/pixel

Wire IQI sensitivity: better than 2% (source side/single wall)

Digitization: 16 bit (65,536 grey levels)

Weight: 68.34 lbs (including buggy)

X-ray tube

Type: constant potential

X-ray beam: directional, collimated

kV maximum: up to 200kV or 300kV

X-ray power: 900W

Current: up to 6 mA

Cooling: forced air

Weight: 97 lbs (300kV source)

Software

Comprehensive, easy to use providing:

- Weld inspection database with search, filter and report facilities
- Duplicate – Lossless data storage to removable media
- Comprehensive event logging
- Same software interface for all HDRTR detector systems and offline viewer
- Runs on laptop or desktop PC under Windows® 7, Windows Vista® or Windows® XP 32/64-bit os.
- Support for 10-bit medical imaging display (desktop PC only)
- Remote support available

Performance

15mm Wall 1.8% source side Wire IQI

Pipe diameter	Distance mm	Scan speed mm/sec	Scan time minutes	Estimated cycle time ² minutes
14"	1,177	7.6	2.5	12.5
16"	1,277	7	3.2	13.2
24"	1,910	3.5	9.5	19.5
26"	2,075	3.2	11.4	21.0
30"	2,393	2.5	16.8	26.8
36"	2,871	1.8	26.6	36.6

Power, interface unit & cables

Size (mm): 330 (W) x 320 (H) x 110 (D)

Weight: 22.04 lbs

Input: 105 to 250V AC 50/60Hz

Output: +32V DC

Interface: USB2 & Power to laptop

Cables: 2 x 25 m cables to scanner

¹ HDRTR-DW1 can be used up to 36" pipe with a 300kV portable x-ray tube, but may require water cooled option due to long exposure times.

² 6 minutes to attach band, fit bugs/detector/x-ray tube, put up safety barrier. 4 minutes to remove all equipment from band to vehicle = 10 minutes.



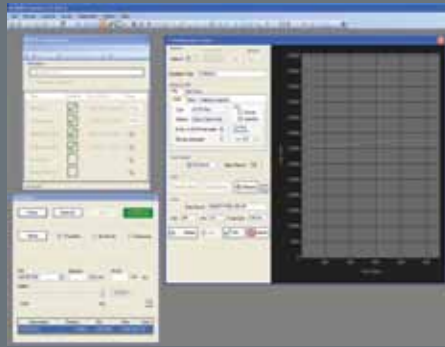
Software features

- 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

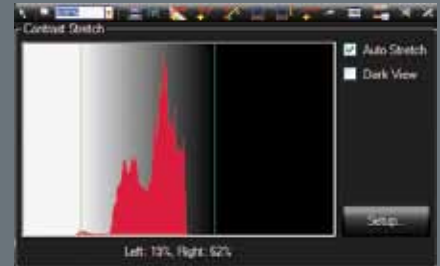
Interpretation tools:

- 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



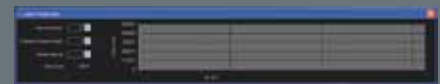
Operator's interpretation "toolkit"



Tool setup



Defect reporting



Auto projection



Inspection view



HDRTR inspection report



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