Bendable DR Panels

B-Series 1025 & 1043

Introduced by
Joaquin Gonzalez
Marketing Manager

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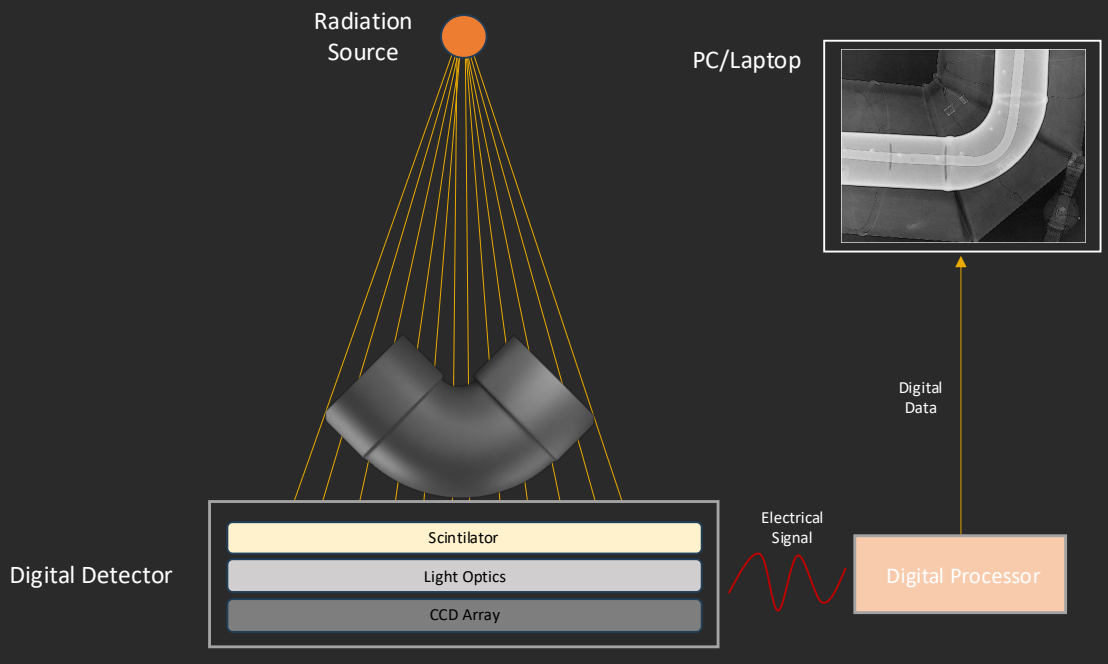
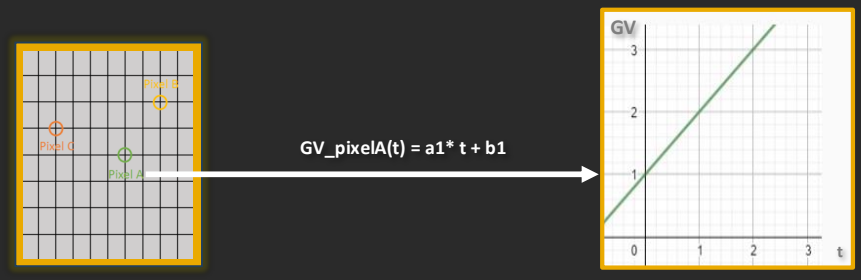
DR Technology Explained



Calibration of DR panels



OFFSET CALIBRATION

- Evaluated with no radiation
- Different values for each pixel GV(t)
  - GV_pixel_A(t) = a1*t + b1
  - GV_pixel_B(t) = a2*t + b2
  - GV_pixel_N(t) = aN*t + bN
- **After offset calibration:**

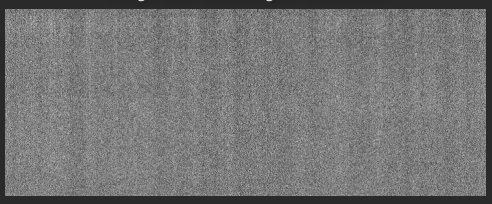
b1 = b2 = bN

GAIN CALIBRATION

- Evaluated with radiation
- Different values for each pixel GV(t)
  - GV_pixelA(t) = a1* t + b1
  - GV_pixelB(t) = a2* t + b2
  - GV_pixel_N(t) = aN* t + bN
- **After gain calibration:**

a1 = a2 = aN

Image after offset & gain calibration



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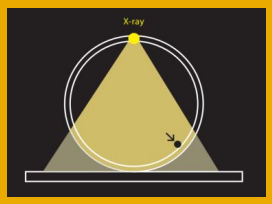
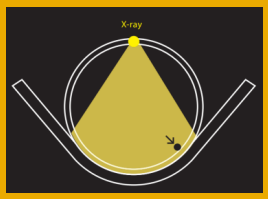
Inspection Images

Bendable detectors redefine RT imaging by achieving a constant radiation path length around curved surfaces. Their unique design enables secure attachment to pipes, ensuring a uniform X-Ray path length, the key to achieve image accuracy.

Flat Shooting



Bent Shooting



ISO 17636-2-2013

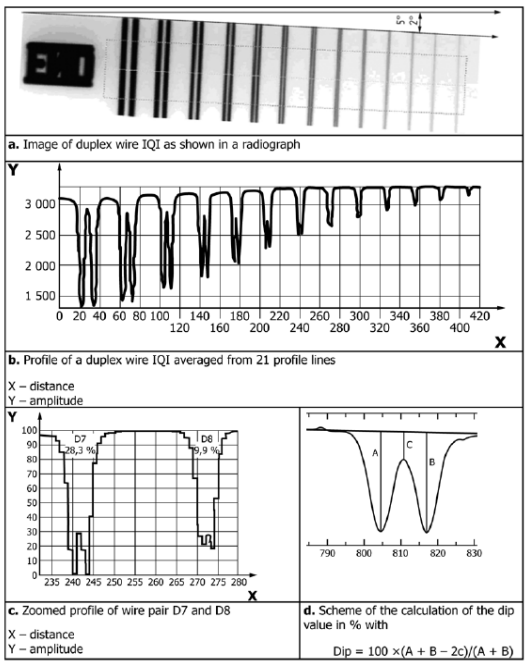
Table B.14 — Maximum image unsharpness for all techniques Class B

Image Quality Class B: Duplex wire ISO 19232-5		
Penetrated thickness w [a] mm	Minimum IQI value and maximum unsharpness (ISO 19232-5) [b] mm	Maximum basic spatial resolution (equivalent to wire thickness and spacing) [b] SR_b^{image} mm
$w \leq 1,5$	D 13+ 0,08	0,04
$1,5 < w \leq 4$	D 13 0,10	0,05
$4 < w \leq 8$	D 12 0,125	0,063
$8 < w \leq 12$	D 11 0,16	0,08
$12 < w \leq 40$	D 10 0,20	0,10
$40 < w \leq 120$	D 9 0,26	0,13
$120 < w \leq 200$	D 8 0,32	0,16
$w > 200$	D 7 0,40	0,20

[a] For double wall technique, single image, the nominal thickness t shall be used instead of the penetrated thickness w.

[b] The IQI reading for system selection (see Annex C) applies for contact radiography. If geometric magnification technique (see 7.7) is used, the IQI reading shall be performed in the corresponding reference radiographs.

ASME BPVC-2021 Section V



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ISO 17636-2-2013

Table B.7 — Wire IQI

Image quality class B Penetrated thickness w mm				IQI value
		to	1,5	W 19
above	1,5	to	2,5	W 18
above	2,5	to	4	W 17
above	4	to	6	W 16
above	6	to	8	W 15
above	8	to	15	W 14
above	15	to	25	W 13
above	25	to	38	W 12
above	38	to	45	W 11
above	45	to	55	W 10
above	55	to	70	W 9
above	70	to	100	W 8
above	100	to	170	W 7
above	170	to	250	W 6
above	250			W 5

ASME BPVC-2021 Section V

Table T-276
IQI Selection

Nominal Single-Wall Material Thickness Range, in. (mm)	IQI					
	Source Side			Film Side		
	Hole-Type Designation	Essential Hole	Wire-Type Essential Wire	Hole-Type Designation	Essential Hole	Wire-Type Essential Wire
≤0.25 (≤6.4)	12	2T	5	10	2T	4
>0.25 through 0.375 (>6.4 through 9.5)	15	2T	6	12	2T	5
>0.375 through 0.50 (>9.5 through 12.7)	17	2T	7	15	2T	6
>0.50 through 0.75 (>12.7 through 19.0)	20	2T	8	17	2T	7
>0.75 through 1.00 (>19.0 through 25.4)	25	2T	9	20	2T	8
>1.00 through 1.50 (>25.4 through 38.1)	30	2T	10	25	2T	9
>1.50 through 2.00 (>38.1 through 50.8)	35	2T	11	30	2T	10
>2.00 through 2.50 (>50.8 through 63.5)	40	2T	12	35	2T	11
>2.50 through 4.00 (>63.5 through 101.6)	50	2T	13	40	2T	12
>4.00 through 6.00 (>101.6 through 152.4)	60	2T	14	50	2T	13
>6.00 through 8.00 (>152.4 through 203.2)	80	2T	16	60	2T	14
>8.00 through 10.00 (>203.2 through 254.0)	100	2T	17	80	2T	16
>10.00 through 12.00 (>254.0 through 304.8)	120	2T	18	100	2T	17
>12.00 through 16.00 (>304.8 through 406.4)	160	2T	20	120	2T	18
>16.00 through 20.00 (>406.4 through 508.0)	200	2T	21	160	2T	20

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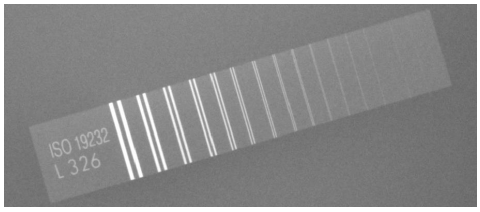
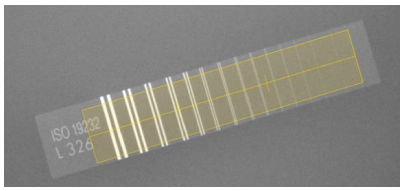
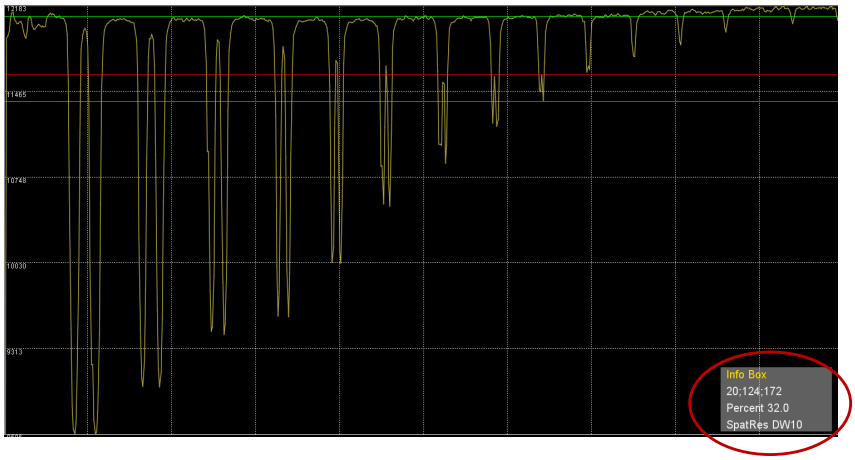
SBR Detector







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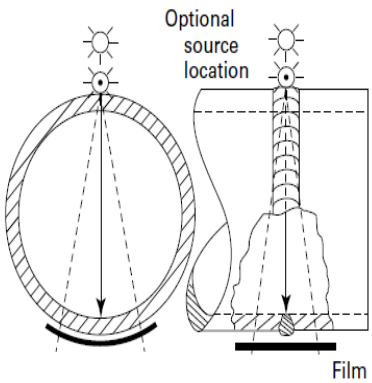
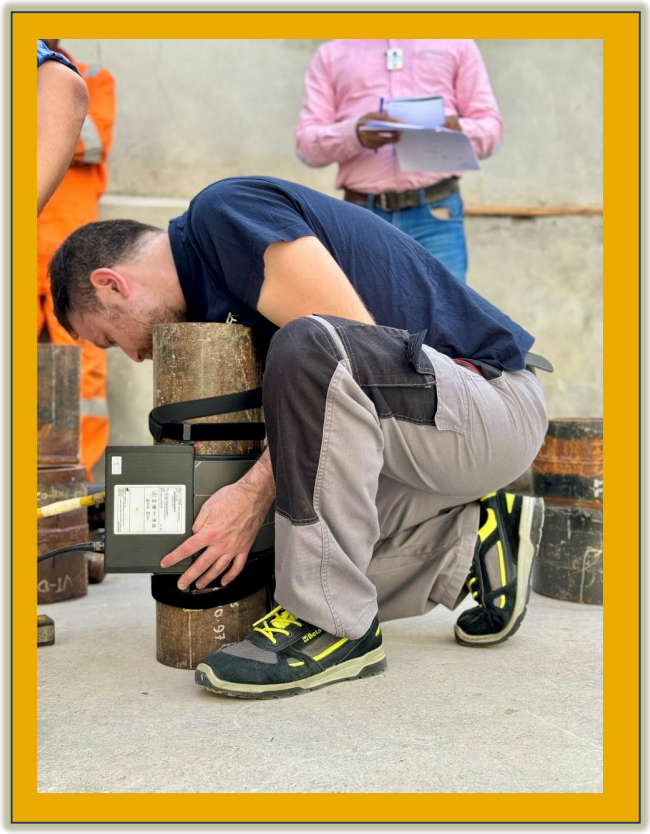
Double-Wall Radiographic Technique

O.D.	Exposure Technique	Radiograph Viewing	Source-Weld-Film Arrangement		IQI		Location Marker Placement
			End View	Side View	Selection	Placement	
Any	Double- Wall: T-271.2(a) at Least 3 Exposures 120 deg to Each Other for Complete Coverage	Single-Wall	 Exposure arrangement — D		T-276 and Table T-276	Source Side T-277.1(a) Film Side T-277.1(b)	Film Side T-275.1(b) (1)



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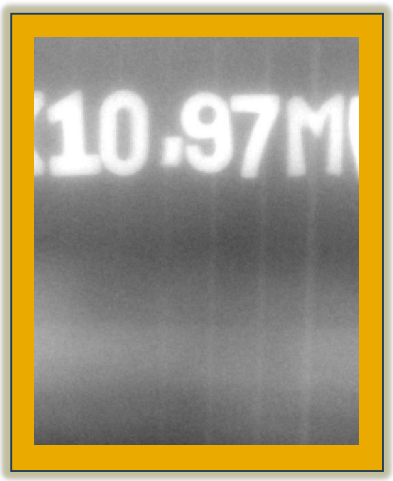
Test Object 1: 6” 10.97 mm Pipe



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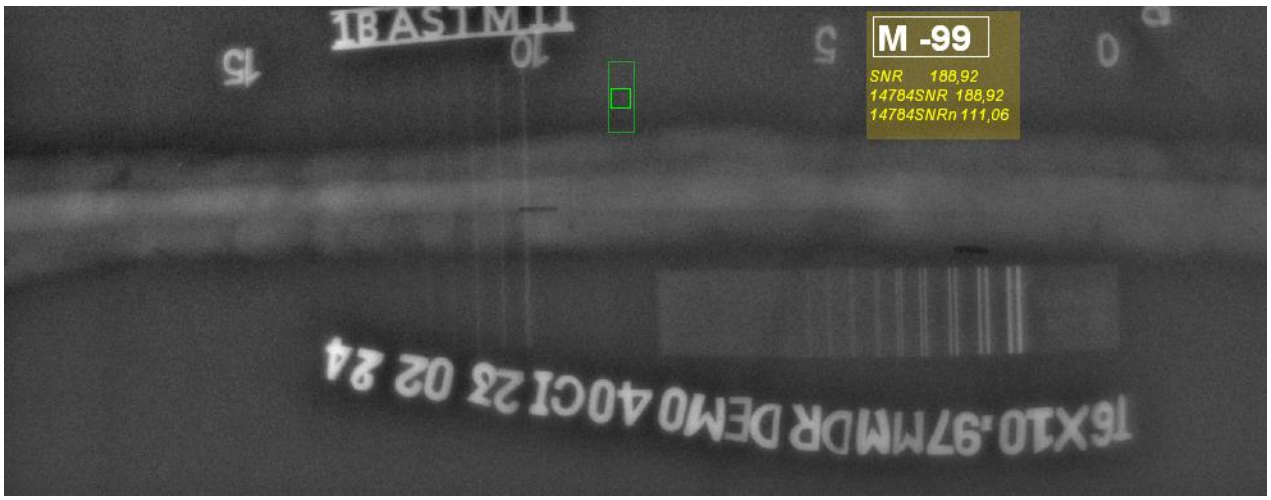
SNRn → 111,06 (Based on EN 14784)



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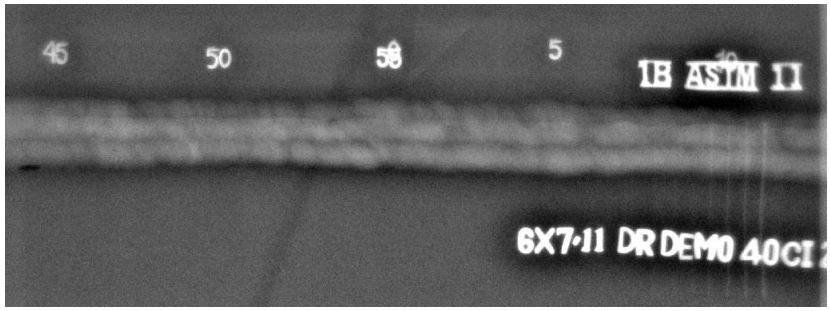
Test Object 2: 6" 12 mm Pipe

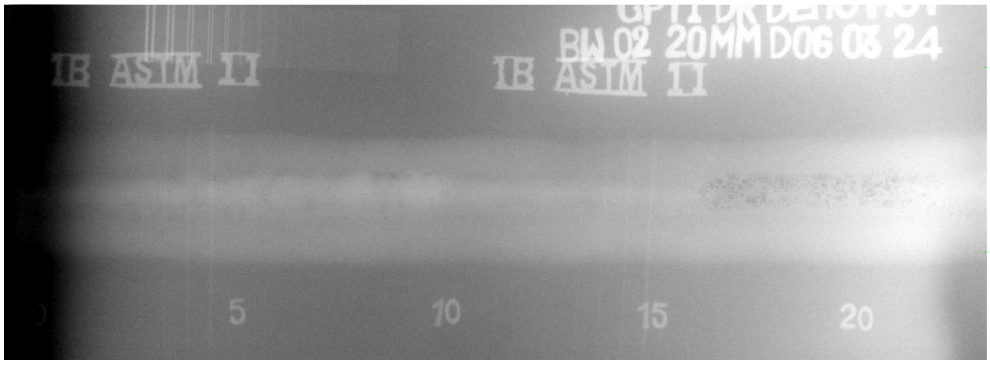
RAW

Filter



Test Object 3: 20 mm Plate

RAW



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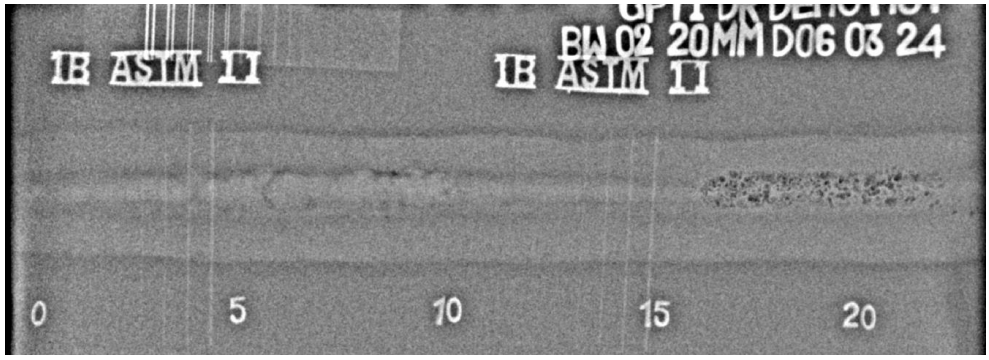

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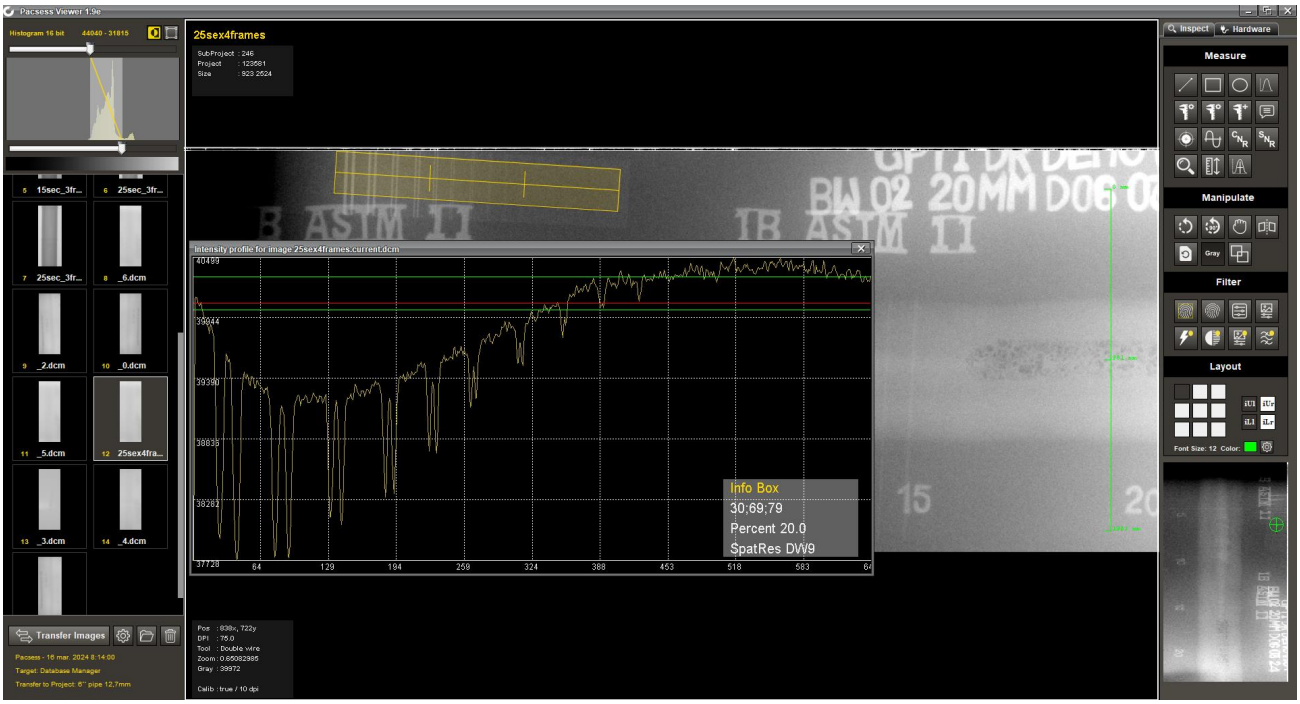

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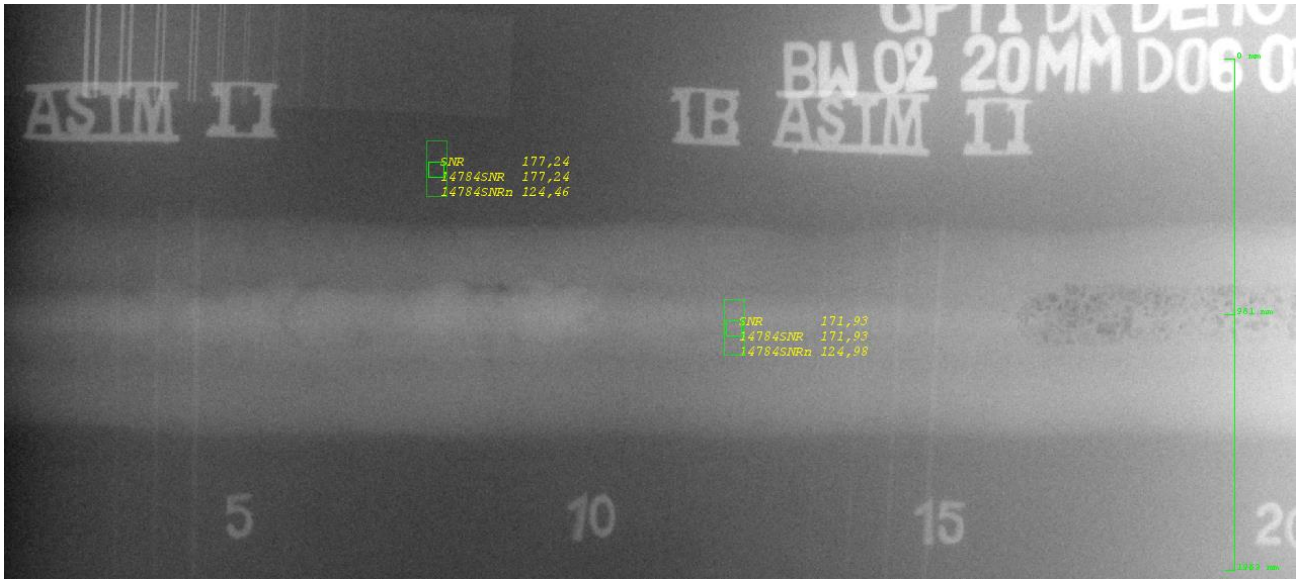

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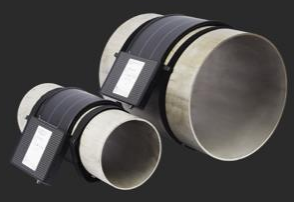
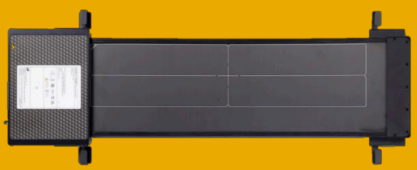
Discover our new pioneering bendable x-ray detectors: a leap in non-destructive testing. Specifically designed for non-destructive testing in pipe inspection, bendable detectors excel in superior resolution and accuracy by conforming to varied geometries. They uniquely enable comprehensive front and rear pipe inspection with a single detector



OPTIMA B-Series 1025

MAXIMA B-Series 1043



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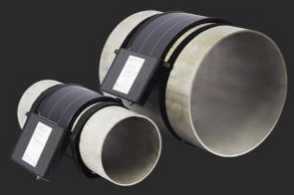
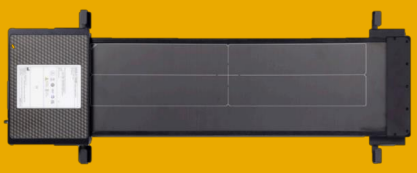
PACSESS Bendable DR Panels

Discover our new pioneering bendable x-ray detectors: a leap in non-destructive testing. Specifically designed for non-destructive testing in pipe inspection, bendable detectors excel in superior resolution and accuracy by conforming to varied geometries. They uniquely enable comprehensive front and rear pipe inspection with a single detector



OPTIMA B-Series 1025

MAXIMA B-Series 1043



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