

# Application Brief



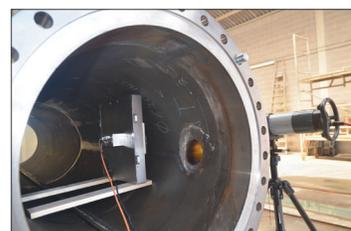
## Weld Inspection

A typical application for a CMOS x-ray detector used in Digital Radiography is the inspection of welds on pressure vessels such as boilers, tanks or pipelines. We tested a Rad-icon 3030 detector in one such application, demonstrating that DR images are just as clear, if not more so, than film, but can be acquired and analyzed in a fraction of the time it takes to expose and develop a standard radiographic film.

### SETUP

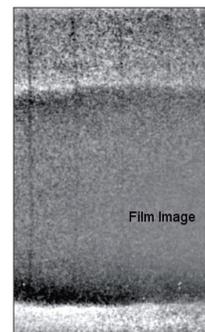
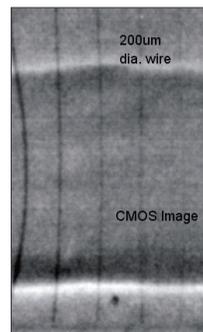
An ICM CP200 portable x-ray generator, operating at 200kVp and up to 8mA, was used to irradiate the welds on a typical boiler vessel, as shown in the pictures below. The sidewall of the boiler consisted of approx. 15mm steel. Inside the boiler, at first a strip of film (Agfa Structurix D5 Pb) was taped against the weld, and then the Rad-icon 3030 CMOS detector was placed behind the weld as shown on the right. A wire IQI (Image Quality Indicator) taped across the weld was used to check for adequate contrast sensitivity in the resulting images.

The standard exposure for the film under these conditions was two minutes, whereas the Rad-icon detector achieved sufficient contrast sensitivity after just ten seconds (averaging 100 frames at a frame rate of 10 frames per second).



### RESULT

The figure below shows the EN 462-1 wire IQI used to check contrast sensitivity in the images, and the resulting processed images for the CMOS detector and the scanned film. The film image is clearly much grainier and it is difficult to see beyond the #12 (250µm dia.) wire, whereas in the CMOS image the #13 (200µm dia.) wire is clearly visible. This indicates that both Class A and Class B sensitivity is achievable with the Rad-icon 3030 under these measurement conditions.



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