

# ANRAD Flat Panel Digital X-ray Detectors for digital mammography and more...

## ANRAD Selenium Technology

The heart of a digital mammography system is the detector plate itself. ANRAD's Selenium-based detector technology allows for direct conversion of X-ray into digital signals, which can be processed into high-quality images within seconds.

With its patented Selenium layered structure, ANRAD digital detector advantages include: fast image acquisition, superior image quality (high DQE, high MTF, high contrast, high dynamic range), and tomosynthesis capability.

## Full Field Digital Mammography

Full field digital mammography (FFDM) produces high resolution images that can be software enhanced by the radiologist to improve reading accuracy, especially for dense tissue. Digital technology also allows for a much faster image acquisition and eliminates film developing time, thus increasing patient throughput.

## Digital Breast Tomosynthesis (DBT)

In full field digital mammography normal overlapping breast tissue can often obscure cancer lesions thereby causing false negative diagnoses.

The use of flat panel X-ray detectors in mammography has undoubtedly improved diagnostics and has also increased patient throughput. Flat panel X-ray detectors also open the possibility of eliminating the obscuring effect of overlapping tissue by enabling the use of 3-D imaging.

One way to eliminate or reduce the effect of normal overlapping tissue is to create a 3-D reconstructed volumetric image of the breast. This image can be presented as slices where only a small fraction of the tissue is visible. Breast computed tomography (CT) exams can be used to obtain this 3-D volume. Another, very convenient procedure that can be used is digital breast tomosynthesis (DBT). Because DBT can be performed on equipment similar to currently used digital mammography equipment, it can offer an easy extension of the current digital screening mammography.

## When will DBT be available?

This new exciting technology is emerging as a significant improvement to current standard digital mammography. Most major original equipment manufacturers are actively working to make it available to clinicians. DBT is arriving, and ANRAD's high-performance detectors and expertise is helping bring it to you.

## Other Applications

The digital X-ray flat panel sensors manufactured by ANRAD offer new possibilities in the diagnosis, treatment, and monitoring of bone pathologies like osteoporosis, rheumatoid arthritis, and osteoarthritis.

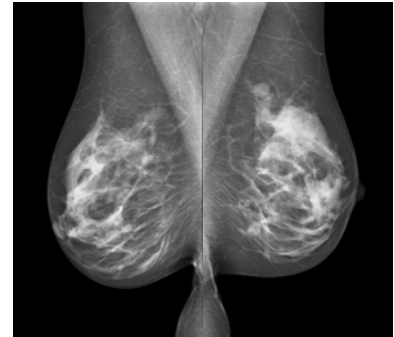
ANRAD's direct X-ray conversion technology is particularly appropriate in applications where spatial resolution is critical. ANRAD's direct X-ray detectors make possible visualization and precise measurement of very-fine structures.

## ANRAD Direct X-ray Detectors

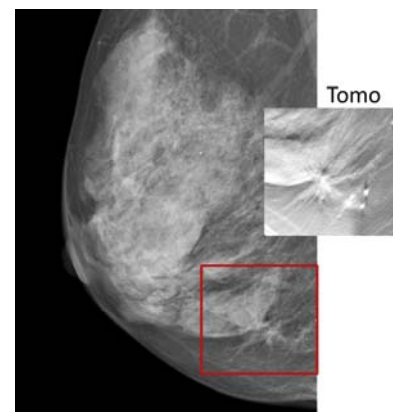
ANRAD offers two models of high-resolution Selenium-based direct X-ray detectors, specifically designed for full field digital mammography (FFDM) for the best possible breast images currently available. Several of the world's largest medical OEMs have integrated these detectors into their digital radiography systems.

## ANRAD

Our customer relationships go beyond just engineering; we provide world-class manufacturing from Selenium film deposition to fully tested X-ray imaging subsystems. ANRAD has been partnering with the world's leading medical OEMs for many years. Our customers value our engineering expertise in digital X-ray imaging and the way we collaborate with their engineering organizations to facilitate fast time to market.



Images Courtesy of D3A Medical Systems



Screening

Images Courtesy of Radprax, Wuppertal, Germany

# anrad

For more information visit our website  
[www.anrad.com](http://www.anrad.com)

## LMAM™ Detector



The larger size LMAM™ detector is designed to address the USA and European FFDM mammography market, and is also designed for tomosynthesis acquisitions.

### Key features

- High DQE, high MTF, high contrast
- FOV: 24 cm x 30 cm (10"x12")
- Pixel pitch: 85 µm
- Image size: 2816 x 3584
- Chest wall distance: <1.4 mm
- FFDM Image cycle time: < 30 sec
- Tomo acquisition: 1 to 2 fps

## SMAM™ Detector



This smaller size detector is well suited for the Asian mammography market.

### Key features

- High DQE, high MTF, high contrast
- FOV: 17 cm x 24 cm (8"x10")
- Pixel pitch: 85 µm
- Image size: 2016 x 2816
- Chest wall distance: < 1.4 mm
- FFDM Image cycle time: < 30 sec

## Power Unit



ANRAD Power Unit is designed to operate with SMAM™ and LMAM™ detectors.

The Power Unit facilitates the integration of ANRAD's detectors with the customer's digital radiography systems.

### Key features

- 24 Vdc input
- Detector-conditioned multi-voltage outputs
- Detector High Voltage (HV) output
- X-ray generator interface
- Image data transmission relay

## Pegasus™ Software

Pegasus™ is the ANRAD software library that provides the interface between the detectors and the customer's host software.

### Key features

- Detector controls: settings, service, and monitoring during operation
- Image capture
- Image corrections: gain, offset, defects, and other special corrections for digital mammography acquisitions
- Optimized image corrections for FFDM and soon for tomosynthesis
- Detector calibration workflow
- Multi-level log file

Pegasus™ runs under Windows XP® as a DLL. The image processing section is based on Intel® **Integrated Performance Primitives (Intel IPP)** library, fully optimized for multi-core Intel processors insuring maximum performance.

Pegasus™ is designed to obtain optimal image correction and compatibility with the customer's host software.

## Development Kit

ANRAD provides a Development Kit to ease integration of SMAM™ and LMAM™ direct X-ray detectors into our customers' digital mammography equipment.

### The Development Kit includes:

- SMAM™ or LMAM™ direct X-ray detector
- Power unit\_with cables
- Frame grabber card
- Pegasus™ software library to handle detector control, image acquisition, and calibration
- Sample acquisition software application with source code to ease integration of Pegasus with customer's host application
- Acquisition workstation with pre-installed frame grabber and software
- Technical reference manual that covers installation and operation of ANRAD system
- CD with factory calibration files of the selected detector

Training is also available upon request.