

## Digital X-rays with CR and DR systems

There are two basic approaches to digital X-ray technology: CR (Computed Radiography with cassettes) and DR (Direct Radiography without cassettes).

When working with a CR system, your X-ray procedures do not change much. Instead of the normal film cassette you will just use a storage film cassette.

The DR system is based on flat panels - electronic detectors - that project an X-ray exposure onto a monitor (e.g. the display screen of a laptop) within seconds.

Below we set out the pros and cons of both technologies. In addition we compare the technical parameters of various CR and CD systems, to provide you with a basis for a possible decision on a system.

Naturally all these systems and detectors can be combined with almost any existing X-ray system (both portable and fixed) and/or built into them.



→ The choice is yours!

## Direct radiography: the cassette free X-ray

# Without cassettes

When you decide on digital direct radiography, you will receive excellent image quality. Flat panels convert X-rays into a digital image signal directly or indirectly.

The intermediate stage of reading out imaging plates as well as handling cassettes is left out.

The X-ray is usually ready for you to examine after five seconds. DR systems are valued for their high image creation speed and the quality of image details.

You will also benefit from:

- **Flexibility**

The X-ray images feature a very high DQE value, representing both soft tissues and bones simultaneously in good quality.

- **Space saving**

Direct radiography can be integrated with existing X-ray systems.

- **Low maintenance**

The absence of mechanical parts like rollers, films etc. means high system and functional stability. The system is virtually maintenance free.

- **Mobility**

DR systems are ideal for mobile applications.

A DR system is built around so called electronic flat panels that can project an X-ray image onto a monitor (e.g. the monitor of a laptop) within seconds.

A distinction is made between electro-direct and opto-direct flat panels. Electro-direct flat panels contain photoconductors. The X-ray radiation hitting the panel directly causes the release of electrons. In contrast, the opto-direct system first converts the energy of the X-rays into light, which is then transformed into an electric charge.

Flat panels exhibit a much higher quantum efficiency (DQE value) than imaging plates and conventional systems. More X-ray quanta are converted into image creating information, leading to a partial reduction in X-ray doses combined with higher image quality.



Example for DR technology: portable X-rays system with the Canon CXDI 50G portable detector