

## **What is a mobile C-arm?**

A mobile C-arm is a medical imaging device that is based on X-ray technology and can be used flexibly in various ORs within a clinic. The name is derived from the C-shaped arm used to connect the X-ray source and X-ray detector to one another.

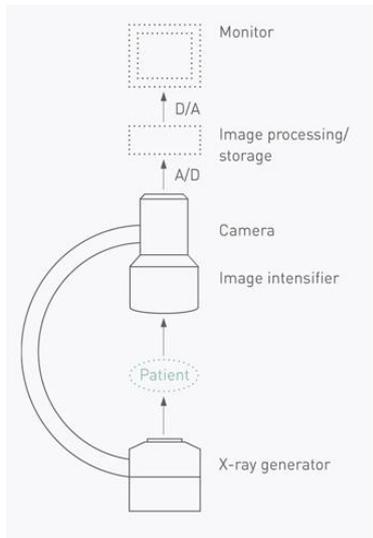
Since the introduction of the first C-arm in 1955 the technology has advanced rapidly. Today, mobile imaging systems are an essential part of everyday hospital life: Specialists in fields such as surgery, orthopedics, traumatology, vascular surgery and cardiology use C-arms for intraoperative imaging. The devices provide high-resolution X-ray images in real time, thus allowing the physician to monitor progress at any point during the operation and immediately make any corrections that may be required. Consequently, the treatment results are better and patients recover more quickly. Hospitals benefit from cost savings through fewer follow-up operations and from minimized installation efforts.

## **How does a mobile C-arm work?**

A C-arm comprises a generator (X-ray source) and an image intensifier or flat-panel detector. The C-shaped connecting element allows movement horizontally, vertically and around the swivel axes, so that X-ray images of the patient can be produced from almost any angle.

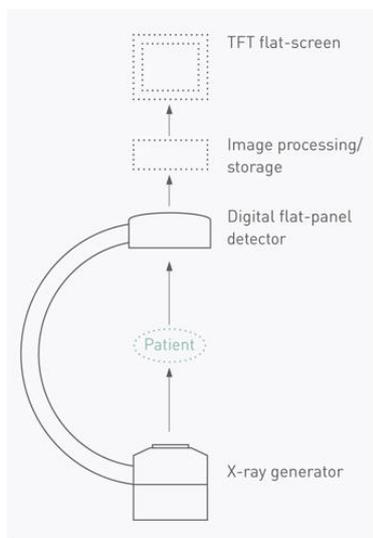
The generator emits X-rays that penetrate the patient's body. The image intensifier or detector converts the X-rays into a visible image that is displayed on the C-arm monitor. The doctor can identify and check anatomical details on the image such as blood vessels, bones, kidney stones and the position of implants and instruments at any time.

## From analog to digital technology



How a flat panel works

In the case of analog image intensifiers the X-ray strikes a fluorescent surface after being attenuated to different degrees through the patient's body. Depending on the strength of the radiation it causes the surface to glow more or less brightly. Behind the surface is a vacuum tube, at the end of which an analog camera captures the glow and displays it on the monitor. Due to the curved surface of the tube the accuracy of the image diminishes toward the edges, leading to distortions.



How an analog image intensifier works

Modern flat-panel technology is the digital development of image intensifier technology. The intensity of the incoming X-rays is converted directly into a digital value. Dispensing with electron optics allows distortion-free images to be produced, hence improving the image quality. The world's first C-arm with flat-panel detector was presented by Ziehm Imaging in 2006.

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