

Report: FUJIFILM FCR

Fujifilm FCR - The Future of Computed Radiography

The effective use of a modern CR solution in a large NHS Foundation Trust

Introduction

Fuji Computed Radiography (FCR), the first digital radiography system in the world, was released in 1983. FCR was developed through Fujifilm's pioneering research and development which led to the digitisation of radiography. The fundamental policy behind the development of the new digital radiography system was to "surpass analogue radiographs on every point". This was a revolution in diagnostic imaging around the world. Fujifilm have continued this growth and to date have installed over 70,000 FCR units globally. The designs have been refined and updated with the latest technologies, and combined with Fujifilm's advanced image processing has evolved into the current FCR product portfolio.

Fujifilm's FCR in practice

The installation of FCR at the Royal United Hospital Bath Foundation Trust (RUH) is an excellent example of the advantages of a modern CR system for a busy NHS hospital. The RUH Trust provides acute treatment and care for a catchment population of around 500,000 people in Bath and the surrounding towns and villages in North East Somerset and Western Wiltshire, UK. The Trust provides 732 beds and a comprehensive range of acute services including medicine and surgery, services for women and children, accident and emergency services, and diagnostic and clinical support services.



The RUH employs over 4,500 staff, some of whom also provide outpatient, diagnostic and same-day case surgery services at local community hospitals in Bath, Somerset and Wiltshire.

The procurement of a new CR system to support analogue and DR rooms instigated some detailed research of other manufacturers. The RUH chose the FCR system due to the well thought out hardware and intuitive software, combined with the advanced image processing available.

'The perfect combination of robust hardware and, operator focused software'

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Fujifilm's FCR Solution In Detail

FCR CAPSULA XLII - A single-slot CR system with optionally available 50-micron spatial resolution. The small 'undercounter' footprint saves space in the department. Compact with high efficiency the FCR CAPSULA XLII enables extremely high throughput of up to 94 IPs/hr. The time to display the image on the CR Console monitor (processing time) is approximately 23 sec with a line by line readout for quicker analysis. The unit is truly integrated for all your diagnostic imaging needs. Three types of IP cassettes (type CC, LC and CH) cover all the clinical needs such as chest, lumbar spine, pantomography (15×30cm), and extremities. Virtually all imaging requirements can be satisfied with this robust unit.



FCR PROTECT CS Plus - The premier model in the FCR Series. The FCR PROTECT CS Plus features superior image quality with 20 pixel / mm sampling pitch mammography and paediatric imaging with four-cassette stacker to increase throughput in the busiest imaging departments. The FCR PROTECT CS Plus has exceeded older systems and realised the world's fastest CR processing speed of 120 IPs/hr. Dual-Side Imaging Plate (IP) Reading technology allows the use of a thicker phosphor layer on the

transparent base, thereby increasing DQE (Detective Quantum Efficiency) by collecting the emissions from both sides of the IP.



CONSOLE ADVANCE - Fujifilm use highly intuitive and adaptable software for capturing, editing and distributing X-ray images. This software is known as Console Advance and is found across the Fujifilm range of products including the DR product portfolio. The workstation has been designed and developed to be simpler, more efficient and refined for the Radiographer. This leads to an increase in operator speed and a reduction in operator error, meaning examinations are quicker and more comfortable for patients.



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The Fujifilm Difference

The research and development which has enabled Fujifilm to successfully deploy fully digital room, mobile and retrofit solutions has all been funnelled into the further development of FCR units. This means technological advances in image processing are shared with Fujifilm's entire product portfolio.

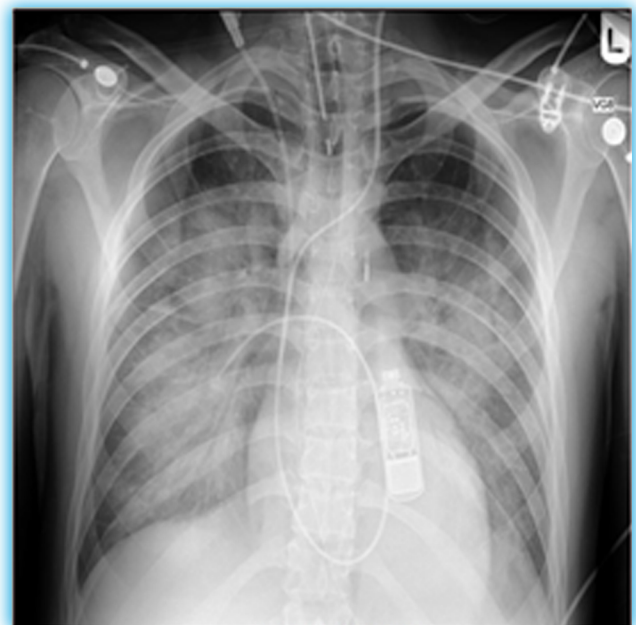
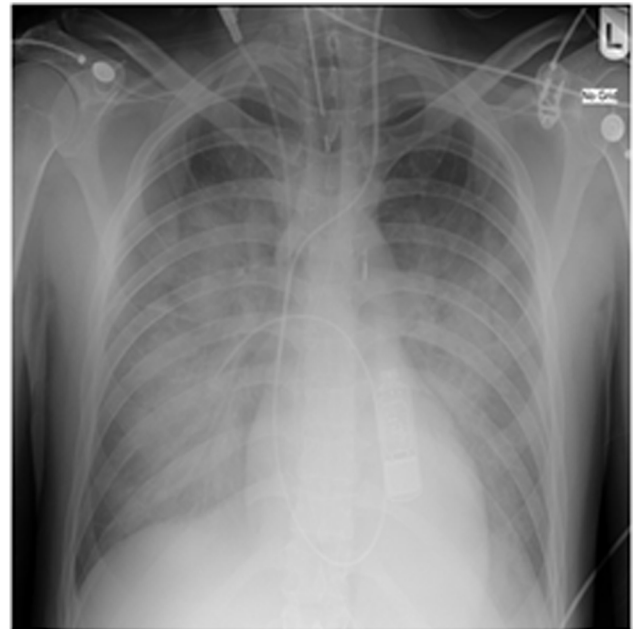
A recent example of this is **Virtual Grid™** processing which enhances image contrast and clarity with up to 50% dose reduction compared to a real grid. The software intelligently estimates and recognises scatter within the images acquired and subtracts this out of the final image.

With the ability to customise its emulated grid characteristics, Virtual Grid™ provides exam flexibility and eliminates image quality problems that result from improper grid alignment or focus. Virtual Grid™ can be applied to all body parts including chest, abdomen, head, spine, pelvis, upper and lower extremities.

Fujifilm have also recently used Artificial Intelligence technologies to further the effectiveness of their image processing. **Dynamic Visualization II™** processing uses advanced auto recognition of bone, anatomy characteristics, and orthopaedic hardware.

This image processing software intelligently adapts image contrast and density, based on image, thickness and structural recognition. It improves uniformity in both dense and soft tissues areas of anatomy.

The culmination of these technologies has led to a CR system which gives excellent results for patient and operator, with diagnostic images which surpass those found on earlier CR systems.



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What Do Our Customers Say...?

Louise Goacher – Reporting Radiographer at the Royal United Hospital Bath commented on the recent install of the FCR system –

Last year the RUH radiology department made the move to Fujifilm CR. Our previous CR was outdated and needed replacing to ensure we maintain our high standards of patient care. After reviewing several different companies we came to the conclusion that Fujifilm was right for us.

During our site visit when we first saw the Fujifilm package in action, my colleagues and I were impressed with the ease of use and the ergonomics of the CR readers. The radiographers who were working within the department had all found the change to Fujifilm easy and it was clear that the CR system was flowing efficiently. The Fujifilm representatives were friendly, approachable and knowledgeable about their products and were able to advise how we could make it work within our own department. There were no 'hard sell' tactics.

When working with Fujifilm day-to-day I have found that the cassettes are lightweight, but still sturdy - which is essential in a busy radiology department! The outer casings are easy to clean and I particularly like that the inner imaging plate itself doesn't require frequent cleaning due to the tight seal on the cassette which doesn't allow dust particles to enter easily.

The multi-reader has been thoughtfully designed as it has different levels where the cassettes are inserted so staff members can use a slot which is naturally comfortable for them. The single-reader is so compact that it can be positioned almost anywhere - we have one positioned behind the lead screen enabling us to stay with our patients whilst processing.

Fujifilm have configured their CR with dose reduction and patient safety in mind; the high kVp technique reduces patient dose and the software algorithms have been designed to increase image clarity, thereby reducing the need to repeat images which previously would not have been diagnostic.

I am most impressed by the quality of the images that are produced - they appear as clear and well defined as DR images, which was a huge step forwards for us compared to our old technology. Due to the increased image clarity it is easier to assess subtle soft tissue foreign bodies and undisplaced fractures - this is helping us provide accurate diagnoses and increasing the level of patient care and experience.

In my experience, I would definitely recommend Fujifilm to another department.

For further information please contact
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