HIRIS rad2

Flat panel digital radiography

3001 x 3001 x 14bits	higher resolution
43 x 43cm square	larger useful area
interval between two exposure <4s	higher productivity
3 times more DQE compared with 400film/screen	a lower X-ray dose

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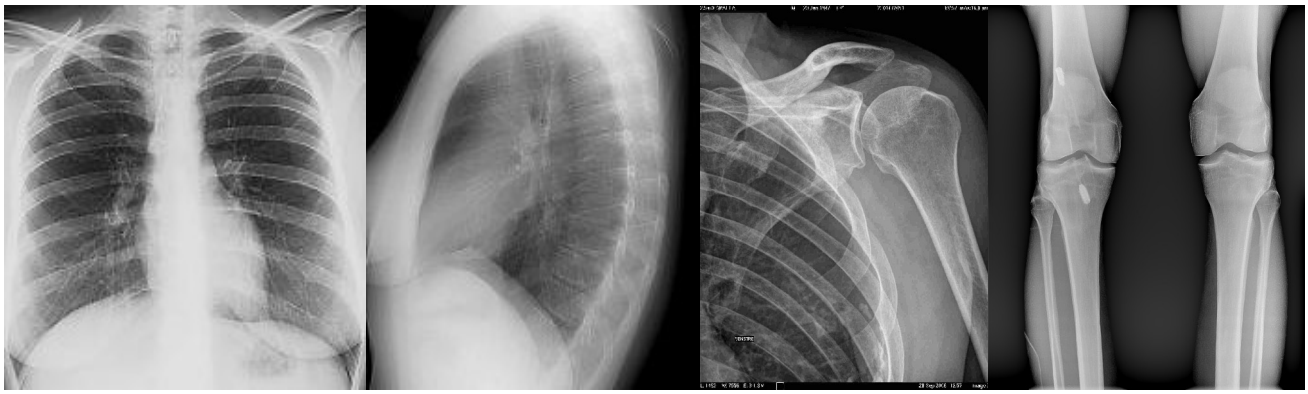
INTRODUCTION

The HIRIS RAD is based on an aSi flat panel technology .
Designed to replace conventional film and computed radiography, this system will allow a very speed examination time, and therefore a high patient work flow, as well as cost savings and excellent image quality with a lower dose.



ADVANTAGE

- **Ergonomics** layout for the best patient and operator comfort.
- **High Image Quality**: High DQE – Low pixel size 143 um.
- **Speed**: Full image processing in less than 4 sec.
- **Connectivity** : integrated Hospital IT management
- **Dose saving** in all operation
- **High productivity**

APPLICATION

- **Skeleton and Chest examinations.**

DETECTOR

- Technology: amorphous silicon with a Caesium Iodide Scintillator
- Detector area: 43 cm x 43 cm.
- Matrix size : 3001 x 3001 pixels.
- Pixel size : 143 x 143 um.
- Pixel data . 14 bits
- External dimensions: 556 x 488 x 45 mm
- Weight : 20 kg

SYSTEM CONTROL

- X-Ray beam quality and dose level controlled by a dedicated “System” computer.
- Multi Grids Control: anti scattered grids ratio 12, L/cm 80 (suggested).
- Ionisation chamber: selectable areas for Automatic Dose Control.
- X-Ray beam size digitally controlled, in pre acquisition, via a CAN BUS collimator.
- X-Ray generator digitally settled before image acquisition.

OPERATIONAL MODE

- Radiography :

useful area	image resolution	frames rate
43x43 cm	3001x3001x14bits	4s/frame

ADVANCED IMAGE PROCESSING

Unlimited APR programs ***“Instant Ready Image”***

More than 20 pre selected parameters for each anatomical study

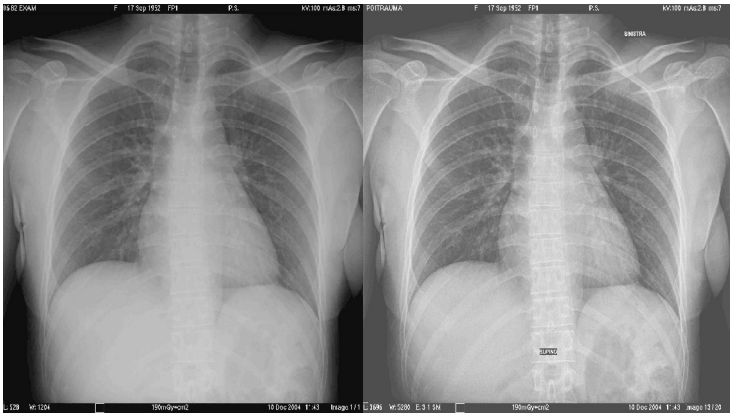
- Best particular image anatomical view
- Lower X-Ray dose
- Shorter examination time
- Best patient and operator comfort

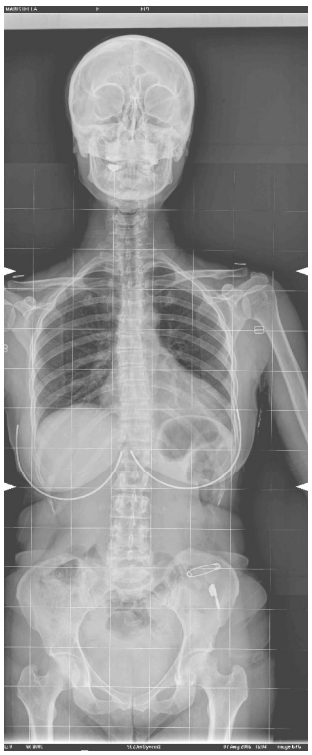
A.T.H , Anatomical Tissue Harmonization

A.T.H. an advanced image processing in DR modality, an image quality enhancement as never before !

- A greater flexibility by adapting the processing to the anatomical region.
- A good detail visibility in under and over penetrated areas.
- Increasing of latitude without loss of detail contrast.
- A.T.H. reduces the need to window and level the images presented on a workstation display in PACS system
- Images with inherent large latitudes as chest, skull and lateral spine strong enhanced without noise amplification and edge artefacts
- A great benefit thanks to a better diagnostic accuracy and radiologist productivity

“Instant Ready Image”





Images Stitching

Integrated procedures for long leg & spine images stitching

Digital Tomography

Combining the flat detector image quality with the remote Control table ergonomics the digital tomography becomes again very effective

IMAGES PROCESSING

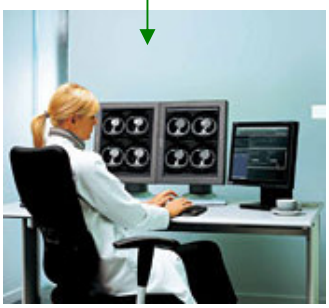
"Instant Ready Image"

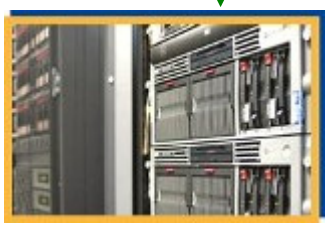
- Sharp spatial filtering, kernel 3x3 to 11x11.
- Auto and manual Windowing: contrast, brightness, grey levels reverse.
- Auto and manual image magnification: zoom on detector and on image.
- Multi-Image overview display, "imagette" presentation for fast exam overview.
- Auto and manual electronic collimators.
- Measuring software tools : distance, angles.
- Image presentation: H/V reverse, 90°rotation, true size image editing
- Text editing with large fixed strings selection

NETWORKING

- Dicom worklist management – RIS connection.
- Dicom storage service – Send images to workstation &/or archiving system.
- Dicom storage commitment
- Dicom print service – Print with film editor program.
- Dicom CDROM – Archiving on CDROM directly from HIRIS.
- DICOM– Modality Performed Procedures Step.

Print | Image review and reporting | Archive





DISPLAY

19”LCD display, DICOM transfer function, medical imaging display.

	TECHNICAL SPECIFICATIONS		
HIRIS rad2	Function & Features	**S**	**O**
User interface	-Windows 2000 operating system, intuitive icons, 3F mouse driver -Operator information in multi-language setting: English, Italian, French, German and Spanish, others on demand.	√	
Archive frame	Patient data archive: patient working list, studies to be done, studies terminated, studies documented (print, store,…)	√	
Operative frame	Frame area of 1280x1024 pixels Image area of 1024x1024 pixels, overlay of: patient data, image data, exposure dose , text symbol and graphic. Icons area: pre-acquisition function selection, image post-processing, images destination for reporting, system status, exposure dose rate evaluation. Thumbnails of the mains 6 images/run acquired.	√	
Display	Control desk :19" LCD, medical display image, colours for icons and graphic (live image display)	√	
	In room: one 18" LCD high brightness (700cd/m2), medical display, Dicom LUT, native monochrome (live image)		√
Special operative modes (Table f.depending)	Tomography: linear tomography with selectable angles Stitching :serial images acquisition and automatic reconstruction for 60cm,90cm,120cm area		√
Automatic pre-acquisition setting of Anatomical Studies	-dose in radiography, 4 patient size/dose -kV-mA / mAs -AEC on/off, measurement fields of ion. chamber -X-Ray tube focal spot -X-Ray focus-detector image plane distance (S.I.D.) -Antiscattered grid :on /off, grid type 1,2 selection -X-ray beam pre-collimation, filter selection -Patient positioning: table tilting, X-ray tube angulations, table top -Image processing in radiography: ROI, LUT, algorithms -Displayed image size, zoom programming -Image windowing (contrast and level)	√	
Post processing	Images review : Fv/Rv research using thumbnails facility, cine-loop mosaic mode images display (4,9,16,1+5,1+7) Image delete :selected images in mosaic mode or full study Image presentation: image magnification from 1:1 pixel detector/display (M1)up to 3:1 (M3),image reverse H/V,90° rotation, windowing (mouse drive C.and L. adjustement), gamma correction, grey scale inversion, spatial filters (sharp/smooth, kernel, Harmonisation), graphic overlay: angles & distances measurement, measure calibre, free text, black area overlapping, ruler, grid, arrow Image collimation: free collimation with automatic image centering	√	
Networking	Dicom 3 class: Store and Storage Commitment, Print, Worklist Modality Performed Procedure Step (RIS-PACS)		√
Archiving (automatic /manual)	Local archiving on removable media (CDRom/DVD,Dicom or Raw format) Remote archiving in mass storage device (PACS) Remote printing using film editor program: format true size standard, row, col, slide, super slide.		√

Technical data

	CONFIGURATION	S	O
Flat panel detector	Dimensions (mm): max 535x490x45,5cm Weight :< 20kg Cooling: ambient air flow, NO water cooling required X-ray sensitive area : 43x43cm, X-ray detection layer: CsI (T) Photodiode+TFT plate Image size : 3000x3000 pixels Pixel pitch : 143x143μm2 Dynamic range :14bits	√	
Detector assembly	Pixium 4600 aSi flat panel Ion chamber :3/5 dominant fields	√	
	Antiscattered grid: carbon fiber, ratio>12:1,>80 blades/cm		√
Computer's cabinet	Main Controller M.C.is the master computer of the diagnostic system, interface & controls of : table, X-ray collimator, X-ray generator, ion chamber, grid, DAM ,PID. PID Image processing computer, PC architecture, Windows 2000 OS, Pentium 4/3GHz /2GBRAM /80GB H.D. (typical configuration) Remote cabinet with standard 15mt cables (mouse and Keyboard included) Control desk-cabinet with table top supporting display, mouse keyboard and Cdrom writer devices	√	
Display	Control desk :19" LCD, medical display with colours for icons and graphic (live image display)	√	
	In room: one/two 18" LCD high brightness (700cd/m2), medical display, Dicom LUT, native monochrome (live image display)		√
	1-2 LCD display trolley with integrated cables		√
Dose Area Meter	Radiography studies and image Dose Area Product acquisition, processing, storing , Dicom conversion format	√	
	DAP Meter chamber		√
	DAP data printer		√

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