

# Vidisco Flat *foX* -17 & *foX*-Rayzor Portable a-Si Flat Panel X-ray Inspection Systems



Flat *foX*-17 Flat Panel System



*foX*-Rayzor Flat Panel System

- Fully battery operated
- Compact and lightweight- entire system fits into one carrying case on wheels, including the X-ray source!
- Laptop-driven flat panel system
- Battlefield Proven – no moving parts or scanning for maximum reliability
- Single 50m lightweight cable connecting flat panel and laptop
- Powerful, proprietary software with 800% non-digitizing zoom and ROI automatic window leveling
- Superb dynamic range of 12-14 bits and excellent resolution – up to 4 lp/mm
- Interchangeable flat panel imagers – large area or super thin (13mm)
- Optional wireless operation

## Experience, Quality & Service

Vidisco Ltd., the leading company in the field of one-man portable X-ray systems for close to 20 years and equipment in more than 60 countries, continues its pioneering approach with its line of Amorphous Silicon (a-Si) Flat Panel portable X-ray Inspection Systems for industrial (NDT), security and veterinarian applications. Vidisco is the only company to manufacture and market a complete line of interchangeable a-Si Flat Panel Systems which are 100% portable, battery operated and suitable for operation in almost any environment, just like its traditional CCD based X-ray systems.

These Flat Panel systems are the first in the world to encompass the incredible resolution and dynamic range offered by flat panel technology combined with complete mobility. All three products, the large format Flat *foX* -17, the super-thin *foX*-Rayzor and the Rayzor Backpack System, allow operators to work without the need for external power and with a wide range of X-ray sources including the highly portable line of Golden pulsed X-ray sources (100% battery operated) and the mini-focal spot battery operated CP1201 continuous source – among others. Every system fits in a compact carrying case, easily transported by one person, including a 150kV or 270 kV battery operated pulsed X-ray source.

Vidisco's near "real-time", portable Digital Radiography (DR) systems which provide images upon request, clearly have enormous time and cost advantages compared to any film-based or CR technology systems. In many cases, the operator can complete a full X-ray examination with a Vidisco a-Si flat panel system in the time required just to set up competing technology-based equipment.

# FLAT PANEL X-RAY INS

## Applications

All Vidisco systems, the large format **Flat foX -17**, the super thin **foX-Rayzor** and the **Rayzor Backpack** are proven to be invaluable tools benefiting operators in the following industries:

### • NDT

Aerospace	Forging, Casting & Welding
Petrochemical	Electronics
Power & Utilities	Ceramics
Art Restoration	Ballistics

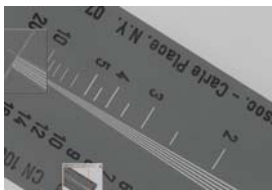
### • Security

EOD/IED	Special Security Services
Airport	Forensics (CSI)
VIP Security	Customs

### • Veterinarian

## DR Benefits

Vidisco's superior DR X-ray Inspection Systems provide immediate imaging with no processing or development time, no scanning time, "cost-free" imaging, and infinite and immediate re-shoots. Vidisco DR products are unsurpassed in design for a "one-approach", quick, easy set-up and usability.



Excellent resolution

## Standard configuration

All systems include:

- State-of-the-art laptop (ruggedized for the Rayzor backpack) computer
- **Flat foX -17** flat panel or **foX-Rayzor** flat panel
- Imager Control Unit (ICU) with cables to connect to the flat panel
- Proprietary software running the **Flat foX -17**, **foX-Rayzor** and **Rayzor Backpack**
- 50 m of CDU/ICU lightweight cable on a removable reel attached inside the carrying case
- Ruggedized case on wheels or backpack carrying case with operation platform
- X-ray cable, charge cable and AC cable
- Operation and Maintenance Manual and laminated Quick Start one-pager
- Backup CD ROM and emergency key
- 1 year warranty

## Flat foX -17

The fully battery operated **Flat foX -17** system operates for over two hours on its rechargeable batteries and for an unlimited time when using an AC power source, 110/220V. The system is even operable with a vehicle DC inverter.

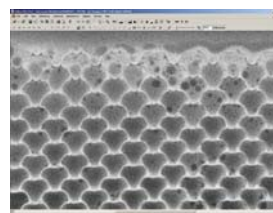
All components of the **Flat foX -17** system - laptop, flat panel imager, ICU, cables and even the X-ray source - fit into one weather-proof ruggedized case with roll-away wheels which serves as a protective operating platform as well. This set-up allows the operator to work in even the most difficult of field conditions.



The **Flat foX -17** system includes a large area flat panel with an imaging area of 28.4 x 40.6 cm ( $\approx 12 \times 16$  in) and allows for resolution of 4 line pair/mm. The 12-14 bit dynamic range allows for the delineation of hairline cracks and production/wear imperfections by achieving truly incredible images – the highest possible quality images with today's technology. The 16,384 (14 bit) gray levels provided by the system are optimized by Vidisco's unique Window Leveling tool which allows the operator to select a "region of interest" and receive the optimal computer generated leveling for the area chosen.



Flat foX-17 positioned on F-15 wing



Bond degradation in F-15 honeycomb

**"The flat panel systems are truly revolutionary for anyone in the field, needing the highest quality of images in mere seconds, rivaling and even surpassing what could once be achieved with film."**

# PECTION SYSTEM

## foX-Rayzor

### Thinner than a film cassette!

The *foX-Rayzor*, another Vidisco first in the world of digital imaging, is the thinnest portable amorphous silicon flat panel X-ray inspection system available. At 13 mm, the *foX-Rayzor* sets new standards for a lightweight, thin imager and compact unit. This super thin panel with roughly a 22 cm x 22 cm imaging area allows for imaging right up to the bottom and side of the panel and maneuvering the imager into the tightest of places.

#### Panel highlights:

- thinnest flat panel in the world – just 13 mm (0.5 inches)!
- 14 bit image producing superb images
- resolution of 3.5 lp/mm
- imaging starts 5mm from the bottom and 7mm from the side of the panel
- only one lightweight connecting cable to imager
- self-standing imager with easy-to-grip handle - even when placed up against a wall
- can drive all older Vidisco *foXrayII* and *foXTrekker* CCD-based systems



13 mm imager



*foX-Rayzor* panel  
in tight corner

The system is laptop driven and fully battery operated with up to five hours on one battery charge; the system can be run with AC power (110/220V) or external DC power. The *foX-Rayzor*'s design allows placing the imager up to 50 meters away from the CDU with only one connecting lightweight cable handling both power and data. The *foX-Rayzor* system provides all the benefits of DR – most importantly, immediate imaging.



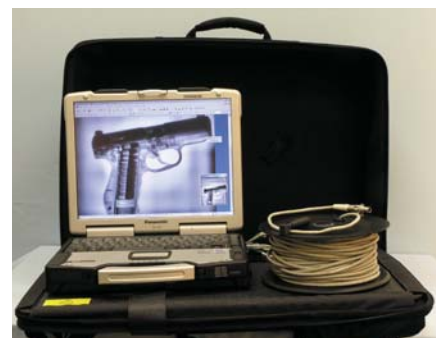
Field inspection at refinery

## Rayzor Backpack

The *Rayzor Backpack System* combines the best of all worlds – the latest technology, a ruggedized computer, operating platform for field operations, and a super thin format imager – all in a backpack! Specifically designed for commandos, Special Forces, and anyone needing an extremely compact system solution, the *Rayzor Backpack* allows operators to get a job done anywhere!



*foX-Rayzor* backpack



*foX-Rayzor* backpack operating platform

The system's ruggedized computer with sun-readable and touch screen options adds to the system's versatility in difficult environments.

All three systems operate with both wireless X-ray (WLX) and a digital wireless system (DWS) for wireless transmission of data to and from the panel.

## Stationary Installation

Vidisco's flat panel systems for stationary/laboratory installations are appropriate for use with most industrial X-ray sources. Operators can take advantage of the flat panel technology in the lab using a *Flat foX -17* or *foX-Rayzor* panel and a PC running the Vidisco proprietary 16 bit software. Best yet, users don't have to lose portability; the panel can easily be packed up and taken to the field with a laptop when needed.

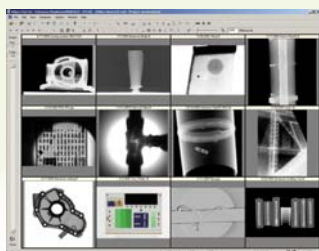


*Flat foX-17* lab installation

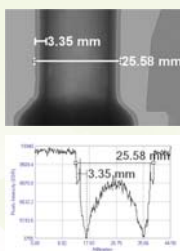


## Proprietary Software

The proprietary based software controls all imaging aspects of the Vidisco systems. The software, with a built-in database, provides almost immediate image reception at the click of a button. Once viewed, all images can be saved to the database with a wide-range of identifying details, most automatically generated by the system. The database can be queried and sorted by any number of parameters with split-second image retrieval.



Sample database library



Line profiling of wall thickness measurement

All images can be enhanced and analyzed with an extensive selection of tools including line profiling and an undigitized zoom of 800%.

The user also has the ability to include annotations directly onto images or associate audio files, recorded on the spot to a particular image.

The software's full control of the X-ray source operation combined with DR technology eliminates repeated approaches to the object being X-rayed.

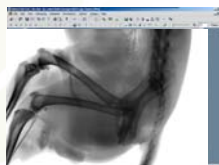
The Vidisco built-in CD writing application, email access and database backup and retrieval make the need for any additional software fully redundant.

## Organic Detection Package

Using the same flat panel **Flat foX -17** and **foX-Rayzor** systems, the Organic Detection package allows operators to distinguish between organic substances such as explosives and drugs, and inorganic substances such as knives, batteries and detonators. Inherent in the method in shooting images allowing organic detection are many factors which made such quality images impossible to obtain unless using a stationary X-ray machine. Vidisco has invested years of R&D and millions of X-ray shots in order to build a unique first-of-its-kind algorithm that is powerful enough to overcome the obstacles and inefficiencies posed by trying to do this type of analysis in a field setting. Today, Vidisco is the only company that can provide this technology in a lightweight and fully portable field unit that allows for operator error and hardware limitations. Both the traditional black and white X-ray images and Dual Energy shots are crisp and provide the highest resolution possible.



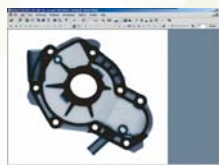
Organic/inorganic detection in suspicious suitcase



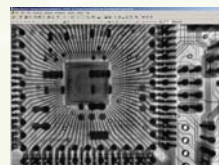
Dog hindquarters



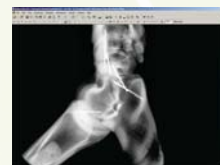
Live fuse QA



Aluminum casting



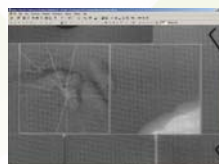
Electronics board



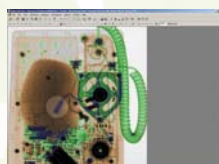
Horse leg



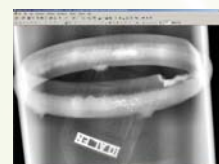
Insulated pipe with corrosion



Crack in ceramic plates



Organic/explosives in IED phone



Porosity on welding



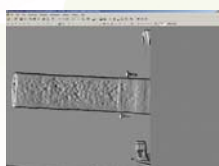
Tank shell



Grenade



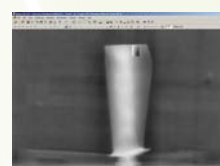
Mobile phone hidden in wall



Pipe with corrosion in 3D embossment



IED bomb inside fire extinguisher



Blade with crack

High resolution images available on our website: [www.vidisco.com](http://www.vidisco.com)

# Specifications for the Vidisco Flat Panel Products\*

## CDU (laptop) \*\*

Screen:	TFT active matrix, 16.7 million colors/256 gray levels
Processor:	Pentium IV or higher
Drives:	40/60 GB hard drive /DVD/CD-RW
Slots:	minimum one PCMCIA card slot
Ports:	Integrated V.90 56 K modem, data and fax support Integrated RJ-45 10/100 TX Ethernet LAN USB
RAM:	512 MB minimum
Operating System:	Windows® 2000 or XP
Image Storage:	Thousands of images; limited by size of hard drive

## Flat foX -17

NATO No. Z5 6635-99-4370654

CDU:	Standard
Imager Size:	50 h x 36.6 w x 4.6 d cm
Imager Weight:	9.0 kg
Imaging Area:	28.4 x 40.6 cm (≈ 12 in x 16 in)
Image Sensor Type:	Amorphous Silicon Flat Panel Array <ul style="list-style-type: none"> <li>• Instantaneous readout time</li> <li>• No mechanical scanning required; no moving parts</li> </ul>
Format:	2240 x 3200 pixels, 127 mm pixel size
Dynamic Range:	12 - 14 bit (16,384 gray levels)
Resolution:	3.94 lp/mm
Compatible X-ray Sources:	<ul style="list-style-type: none"> <li>• Golden XR200, Inspector 200 and XR 150 pulsed sources (150kV)</li> <li>• Golden XRS-3 (270 kV) pulsed source</li> <li>• CP 1201 battery operated continuous source</li> <li>• Most continuous industrial sources up to 160 kV and greater with proper shielding</li> </ul>
Power Supply:	2-3 hours operation on internal re-chargeable batteries. Auto sensing AC power supply; 110/220V AC, 50/60Hz; external DC (with inverter)
Cables:	<ul style="list-style-type: none"> <li>• 50 m of cable on removable built-in reel</li> <li>• ICU to imager</li> <li>• ICU Charge</li> <li>• X-ray</li> <li>• AC power</li> </ul>
Carrying Case:	Ruggedized Case on wheels
Dimensions:	82.6 l x 52 w x 28.7 d cm.
System Weight in case:	≈ 39 kg. (excluding X-ray)

## foX-Rayzor

NATO No. Z5 6635-99-9791859

CDU:	Standard
Imager Size:	36 h x 33 w x 1.3 d cm 14.2 h x 13 w x 0.5 d in
Imager Weight:	3.5 kg
Imaging Area:	492 cm <sup>2</sup> (22.2 x 22.2 cm); (≈ 9 in x 9 in) 5 mm from bottom and 7 mm from side
Imager Depth:	13 mm
Image Sensor Type:	Amorphous Silicon Flat Panel Array <ul style="list-style-type: none"> <li>• Instantaneous readout time</li> <li>• No mechanical scanning required; no moving parts</li> </ul>
Dynamic Range:	14 bit (16,384 gray levels)
Resolution:	3.5 lp/mm
Compatible X-ray Sources:	<ul style="list-style-type: none"> <li>• Golden XR200, Inspector 200 and XR 150 pulsed sources (150kV)</li> <li>• Golden XRS-3 (270 kV) pulsed source</li> <li>• CP 1201 battery operated continuous source</li> <li>• Most continuous industrial sources up to 160 kV and greater with proper shielding</li> </ul>
Power Supply:	5 hours operation on internal re-chargeable smart lithium ion batteries Auto sensing AC power supply; 110/220V AC, 50/60Hz; external DC (with inverter)
Cables:	<ul style="list-style-type: none"> <li>• 50 m of cable on removable built-in reel</li> <li>• ICU to imager – 3m</li> <li>• ICU Charge</li> <li>• X-ray</li> <li>• AC power</li> </ul>
Carrying Case:	Ruggedized Case on wheels
Dimensions:	82.6 l x 52 w x 28.7 d cm.
System Weight in case:	≈ 33 kg. (excluding X-ray)

\* System configuration is subject to market changes and manufacturer specifications

\*\*Laptop configuration is subject to market changes and manufacturer specifications.

## Rayzor Backpack

CDU:	Hardened, with sun-readable and touch screen
Imager:	See foX-Rayzor
Compatible X-ray Sources:	See foX-Rayzor
Power Supply:	5 hours operation on internal re-chargeable smart lithium ion batteries
Cables:	See foX-Rayzor
Carrying Case:	Backpack
Dimensions:	40 d x 61 h x 45 w cm.
System Weight in case:	≈ 25 kg. (excluding X-ray)



Wireless X-ray



Digital Wireless System



FlatfoX-17 Tripod Mount



foX-Rayzor Panel Protector



foX-Rayzor Tripod Mount



CP-1201 X-ray Source



External Video Camera



Golden X-ray Sources

## Dynamic Software Features

**Adjustable X-ray exposure time and different X-ray source integration**

**Audible and Visual X-ray warnings during X-ray activation**

### Visual Library/Database Management:

All images can be stored with identifying details such as user name, place, date, time, category, project name, type of imager, type of X-ray and more. Images may be viewed in thumbnails or full screen with accompanying identifying details. The sort and query options allow for quick retrieval of images. Includes additional powerful database tools such as import/export backup/restore and quick save.

**Image Enhancement Tools:** brightness and contrast, histogram equalization, gamma correction, sharpness, edge enhancing, emboss or pseudo 3D, polarity, gain, pseudo color

**Window Leveling:** ability to select a "Region of Interest" (ROI) and either manually or automatically receive the optimum window leveling for the selected area

**Annotation and Measurement Tools:** Line profile, notes, sound

**Non-digitizing zoom of up to 800%!**

**Quick automatic calibration sequence**

**Multiple undo/redo and original image restoration**

**Image rotation, summing, averaging, subtraction and overlay**

## Options

**Wireless X-ray (WLX):** allows communication with the X-ray without cables

**Digital Wireless System (DWS):** allows sending data between the laptop and imager without the use of cables

**Additional Cable:** option to include additional 50 meters of cable connecting the CDU and Imager

**Automobile DC Inverter:** capability to power the system with a DC/AC inverter connected to vehicle battery

**Tripod Mount:** special lightweight accessory allowing the easy mounting of the each respective flat panel on any standard or heavy duty tripod.

**Special Panel Protector for Rayzor:** padded, weather-resistant Codura panel protector which easily slips over the Rayzor imager and tripod mount.

**Multi-Language Support:** the systems fully support multiple languages in the application and operating system

### Hardened Computer

### External Video Camera for the foX-Rayzor system

**VCU-22:** "Extreme" 10 bit CCD Video Camera Unit with large imaging area (56 x 42cm) and fully interchangeable (plug & play) with Flat Panel Systems.

**CCD Package:** flat panel systems package allowing for the operation of the foXRayII and foX Trekker CCD-based imagers

**Upgrade Package:** Owners of Vidisco foXRayII and foX Trekker CCD based systems can upgrade to the flat panel products.